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Sickness Among the "Depression Poor" *†

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THERE has been much speculation as to the effect of the economic depression on health, but no adequate index for evaluating its importance has been available. The usual barometer of health—or rather of ill health—is mortality. The general death rate and infant and tuberculosis mortality have declined during several years of severe economic stress to the lowest figures on record. This favorable situation has led some sanitarians to speculate as to the possible health benefits of the depression. They suggest that reduced excesses of eating and drinking and the lessened nervous tension that accompanies the quieter life of hard times, have actually improved health.

These interesting speculations are based on the number of people *dying* each year. Actually, mortality is a poor index of the health of the people. The death rate does not indicate the extent or nature of the 99 per cent of illnesses that are not fatal, or of physical impairments such as malnutrition. Furthermore, an actual increase in mortality among the unemployed and their families could have taken place but have been entirely masked by the downward trend among the more prosperous elements of the population.

The purpose of the present study was to obtain at first hand a record of all types of illness among the families of the unemployed for comparison with similar data for the families of their employed neighbors. The information was secured by house-to-house canvasses of families in the poorer districts of industrial communities severely affected by unemployment.

METHOD AND SCOPE OF THE STUDY

The investigation obtained records of illness for a 3-month period in the late winter and early spring of 1933, and a 4-year income and employment record for each member of some 12,000 families in 10 localities. Eight large cities and 2 smaller industrial communities were canvassed. This paper includes preliminary data for 5 localities—Birmingham, Ala., Detroit, Mich., Greenville, S. C., Pittsburgh, Pa., and Syracuse, N. Y.

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† From the Office of Statistical Investigations, U. S. Public Health Service and the Division of Research, Milbank Memorial Fund.

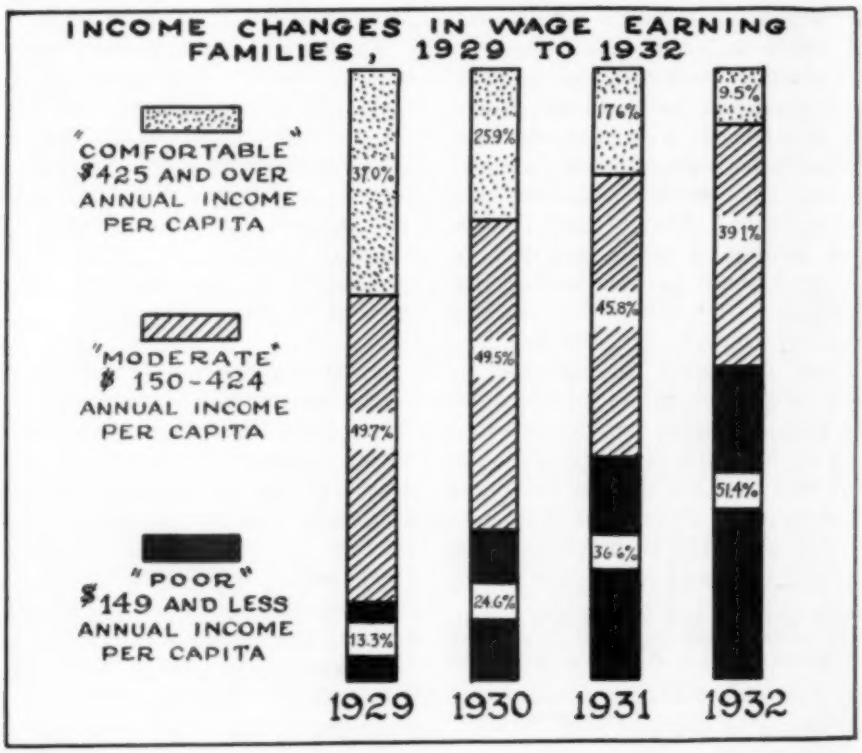
Only the poorer parts of the localities were surveyed. Well-to-do sections and slum areas were avoided. The desired sample of the population was one in which unemployment was high at the time of the canvass but which was composed largely of individuals of the wage-earning class who were able and willing to work. Living side by side with these families of the unemployed, there were other families who, even in these poor districts, were still in reasonably comfortable circumstances, that is, had adequate food, clothing, and shelter. These "comfortable" families serve as a control group whose illness record can be compared with that of their less fortunate neighbors. In the selected districts every family was included unless the information was refused, and refusals were exceedingly rare.

Although the enumerators were hired locally, the canvass in each city was in immediate charge of a person trained in the collection and tabulation of such data, who was assigned from the permanent personnel of the U. S. Public Health Service or the Milbank Memorial Fund. Because of prevailing economic conditions it was possible to get exceptionally good enumerators; they canvassed families only after careful instruction and trial visits with the local supervisor.

All persons worked under uniform written instructions. Thoroughness rather than speed was encouraged in the enumerators.

FIGURE I

Percentage distribution of the surveyed population according to annual family income per capita for each of the years 1929–1932. The population includes 20,283 individuals in 4,421 families in Birmingham, Detroit, Greenville, Pittsburgh, and Syracuse.



THE POPULATION SURVEYED AND ITS ECONOMIC HISTORY

In the 5 localities included in this paper, about 6,000 white families were canvassed. Of these schedules, 4,421 were sufficiently detailed to permit computation of exact family incomes for each year from 1929 to 1932, and were reasonably complete in other respects also. A total of 20,283 individuals is included in these families.

The usual occupation of the chief wage earner in 1929 was skilled laborer in 66 per cent of the families; unskilled 16.5 per cent; clerical and salesmen 10 per cent; dealers, merchants, etc., 6 per cent; professional 1.5 per cent. In 1932, in 17 per cent of the families the chief wage earner was without employment throughout the year and 19 per cent had received public relief at some time during the year.

In nearly 58 per cent of the families, the head of the household was native white of native parents, in 11 per cent of foreign or mixed parents, and in 31 per cent foreign born. The racial stock of the group of foreign or mixed parents was largely English, Irish, and German, but the foreign born included also considerable numbers of Polish, Italian, and Slavic stocks.

Income as used in this study consists of all receipts from any source, including savings and borrowed funds used for living expenses and the value of food tickets in the case of families receiving such aid from welfare institutions. Family income per capita was used as the basis of classifying the households because this seems to describe economic status more accurately than the total income which takes no account of the size of the family. Figure I shows the population grouped according to annual per capita income for the years 1929 to 1932. For convenience in discussion, the individual income classes have been combined into 3 groups and designated as follows:

Poor—$149 and less per capita per year
Moderate—$150–$424 per capita per year
Comfortable—$425 and over per capita per year

These names have no significance other than as convenient labels indicating a rising scale of per capita income.

Figure I shows the tremendous reduction in income which took place in the surveyed population during the depression. The "poor" group ($149 or less per capita) which constituted only 13 per cent of the total in 1929, was equal to 51 per cent in 1932, while the "comfortable" group ($425 or more) dropped from 37 per cent of the total in 1929 to 9 per cent in 1932. The percentage in the "moderate" class ($150–424) did not change greatly. This does not mean that individuals in this group in 1929 suffered no diminution in income during succeeding years, but that as some dropped into the low income group, others from the higher class took their places. Actually, over half of those in moderate circumstances in 1929 had fallen into the poor category by 1932. Nine out of 10 persons classified as "poor" in 1929 remained in that state throughout the 4 years. Very few persons enjoyed an increasing income during the depression and a very large percentage suffered a drop in income.

ILLNESS IN DIFFERENT ECONOMIC GROUPS

Inquiry was made about illness from all diseases and accidents, including mild as well as severe cases. What was included as illness was to a considerable extent a matter of what the informant (usually the housewife) remembered and designated as such. Hence the records of disabling cases are probably better measures of real sickness than the total cases, because disabling illnesses were more likely to be accurately and completely reported.

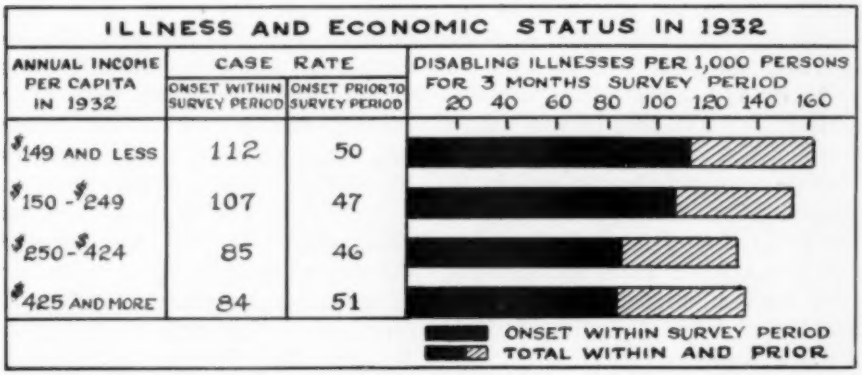
Illnesses are classified as having (1) onset within the survey period and (2) onset prior to the survey period. Each of these groups is shown as (a) all cases, (b) disabling cases, consisting of those causing inability to carry on usual activities, and (c) cases in which the patient was confined to bed for one or more days. All bed cases are included in the disabling class. In the present paper, disabling case rates have been used exclusively.

The illness rates are for the 3-month period of the survey and are not reduced to an annual basis. The "survey period" refers to the 3 months prior to the enumerator's visit; it is the period of time for which illness data were recorded. The actual canvass in each city required from 3 to 4 weeks. The dates of the canvass varied in the different localities but were all between March 20 and May 15, 1933.

Illness and 1932 income—In Figure II the incidence of illness is shown for 4 groups of the surveyed population classified according to annual per capita income in 1932, to show the relation between illness in 1933 and economic status approximately as it existed at the time of the canvass. The illness rate is higher for the lower income groups, when illnesses with onset within the survey period are considered. Illnesses with onset prior to the period (largely chronic cases) show no definite relation to income. For illnesses within the survey period, the disabling case rate in the lowest income group ($149 and less) is 33 per cent above that of the group with an annual per capita income of $425 and over. The poor in the surveyed group are obviously subject to more illness than their more fortunate neighbors in relatively comfortable circumstances.

FIGURE II

Disabling illness during a three months period in the early spring of 1933 in wage earning families classified according to income per capita in 1932, in five surveyed cities. (Number of persons observed: $149 and less, 10,424; $150–$249, 4,569; $250–$424, 3,353; $425 and over, 1,937. Total 20,283.)



Illness and income change—Families in the various income classes experienced different economic histories during the depression. For example, of the 10,424 individuals who were classified as "poor" in 1932, 23 per cent were "poor" in 1929, 60 per cent were "moderate," and 17 per cent were "comfortable." A further analysis of the relation between "depression history" and illness was made. For this purpose the individuals were divided into 6 categories according to economic status in 1929 and 1932, as follows:

I. Individuals experiencing materially lowered family income per capita between 1929 and 1932 were classified:
   1. Comfortable in 1929 and poor in 1932
   2. Moderate in 1929 and poor in 1932
   3. Comfortable in 1929 and moderate in 1932

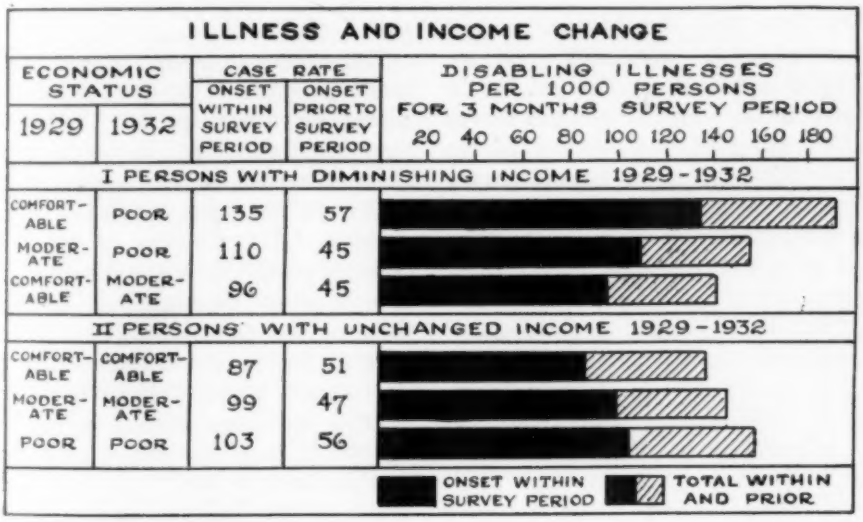
II. Individuals who had not experienced materially lowered family income between 1929 and 1932 were classified:
   1. Comfortable in 1929 and 1932
   2. Moderate in 1929 and 1932
   3. Poor in 1929 and 1932

showed an incidence of disabling illness that was 55 per cent higher than the rate (87 per 1,000) of their more fortunate neighbors who were equal in status in 1929 but suffered no drop in income by 1932, that is, the "comfortable in 1929 and 1932" group. The families which had dropped from comfortable to moderate showed a 10 per cent higher disabling illness rate than the above group that had experienced no drop in income. The group which had dropped from moderate to poor

FIGURE III

Comfortable = $425 and over per capita per year
Moderate = $150–$424 per capita per year
Poor = $149 and less per capita per year

Disabling illness in wage earning families classified according to change in economic status, 1929–1932, in 5 surveyed cities. (Number of persons observed: Comfortable–poor, 1,772; Moderate–poor, 6,209; Comfortable–moderate, 3,919; Comfortable–comfortable, 1,818; Moderate–moderate, 3,761; Poor–poor, 2,443. Total, 19,922—361 persons with higher income in 1932 than in 1929 are omitted.)

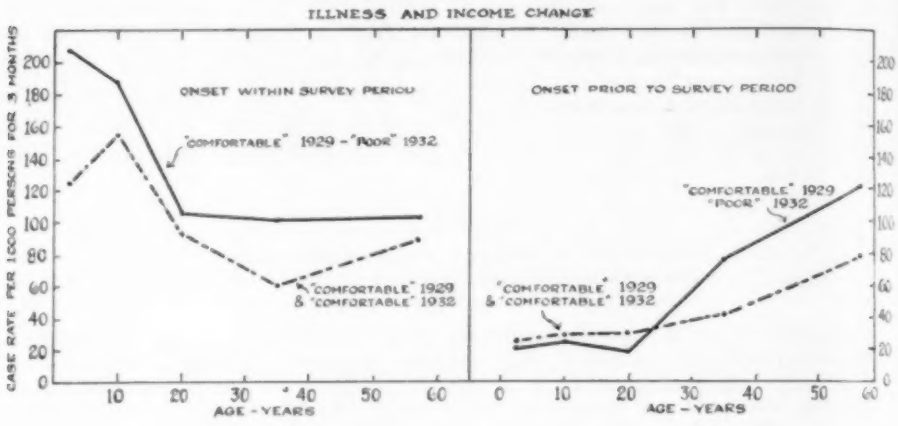


Sickness data for these groups are given in Figure III. The highest illness rate is experienced by individuals whose fortunes have suffered the greatest change, namely, the group comfortable in 1929 and poor in 1932. This group with a rate of 135 per 1,000 show an 11 per cent higher illness rate than those that were in moderate circumstances throughout the 4 years. It is interesting to note that the groups which may be designated as the "depression poor," that is, the "comfortable 1929—poor 1932," and "mod-

FIGURE IV

Comfortable = $425 and over per capita per year
Poor = $149 and less per capita per year

Disabling illness at specific ages in 5 surveyed cities in 2 groups of wage earning families, one which suffered a large decrease in income between 1929 and 1932 (comfortable 1929—poor 1932) and the other which maintained unchanged income (comfortable 1929 and 1932).


ILLNESS AND INCOME CHANGE
CASE RATE PER 1000 PERSONS FOR 3 MONTHS
ONSET WITHIN SURVEY PERIOD
"COMFORTABLE" 1929 - "POOR" 1932
"COMFORTABLE" 1929 & "COMFORTABLE" 1932
AGE - YEARS
ONSET PRIOR TO SURVEY PERIOD
"COMFORTABLE" 1929 "POOR" 1932
"COMFORTABLE" 1929 & "COMFORTABLE" 1932
AGE - YEARS

erate 1929—poor 1932," have a higher illness rate than the "chronic poor," *i.e.*, "poor 1929—poor 1932."

The same trends are observed for the total illnesses, onset within the survey period, and even the addition of the cases with onset prior to the survey period (largely chronic) does not obscure the fact that a relatively large drop in economic status appears to be associated with a high illness rate.

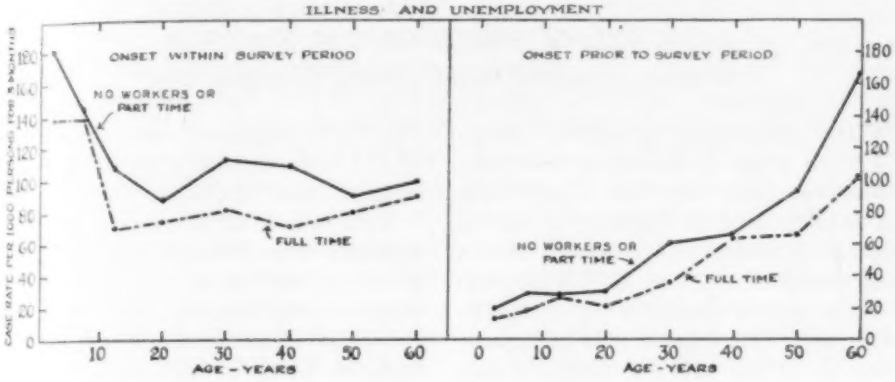
Figure IV shows the age-incidence of disabling illness in two groups, "comfortable 1929—poor 1932," and "comfortable 1929—comfortable 1932." It will be seen that for illnesses with onset within the survey period the "comfortable–poor" group shows a higher rate of illness than the "comfortable–comfortable" class in each of the 5 age groups used. The chronic illnesses appear to be slightly higher in the "comfortable–comfortable" group up to about 25 years. Above that age, the chronic cases, like the acute, are less in this group than in the "comfortable–poor" class.

Respiratory diseases account for the larger proportion of the difference in illness rate between the "depression poor" and their more fortunate neighbors. However, the differences are still evident in the group of non-respiratory diseases. The children of the "depression poor" show a higher incidence of respiratory diseases than the children of the families which were unaffected in economic status by the depression. This difference is not evident in the communicable diseases of childhood such as whooping cough, measles, mumps, etc.

Illness and unemployment—Since a high incidence of illness is associated with low income, it would be expected that families containing no employed workers or part-time workers only would show a higher illness rate than families having full-time workers. Figure V indicates that this is true at each

FIGURE V

Disabling illness at specific ages in 5 surveyed cities in families classified according to employment status of wage earners. Data for all ages: Unemployed or part-time: Onset within—116 per 1,000; Onset prior—53 per 1,000; Population, 11,785. Full-time: Onset within—88 per 1,000; Onset prior—42 per 1,000; Population, 8,498.



age and for both acute and chronic conditions.

SUMMARY

Records of illness in 1933 and economic history from 1929 to 1932 have been collected on over 12,000 families. The present paper presents preliminary results of the survey in 5 cities—Birmingham, Detroit, Greenville, Pittsburgh, and Syracuse. This group comprised 4,421 families and included 20,283 individuals.

The results show a higher incidence of disabling illness among individuals in the lower income classes in 1932 than among individuals with higher incomes. Illness is highest among a group of the "depression poor" which was in reasonably comfortable circumstances in 1929 but had dropped to comparative poverty by 1932; their rate is higher than that of their more fortunate neighbors who suffered no drop in income and higher than the illness rate of the "chronic poor" who were in a condition of poverty even in 1929. Families containing only unemployed or part-time workers show a high incidence of disabling illness.

The writers have purposely refrained from drawing conclusions as to the broad significance of the findings. For example, no attempt has been made to estimate the number of the whole wage-earning population of the United States which has had a similar history to the group surveyed in the 5 localities. Nor is it possbile to judge the seriousness of the situation indicated by the increased illness rates observed among the "depression poor" until the nature of the sickness is analyzed in more detail. Such interpretations must await more complete analysis of the entire volume of data collected.

The Growth of American Cities*

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THE phenomenal growth of American cities is known to everyone. How New York City with a population of 49,401 in 1790 became a city of 6,930,446 inhabitants; Chicago with a population of 4,470 in 1840 within less than a century became a city of 3,376,438; and Philadelphia with a population of 28,522 in 1790 became a city of 1,950,961 inhabitants; Detroit with 1,422 in 1820 acquired enough people to make 1,568,622 in 1930; and Los Angeles with a population of 1,610 in 1850 in 80 years came to exceed 1 million, and to have a population of 1,238,048 is common knowledge.

It is not so well understood why Lynn, Mass., with 2,291 in 1790; New Bedford, Mass., with 3,313; Cambridge, Mass., with 2,115; Albany, N. Y., with 3,498; Norfolk, Va., with 2,959; Springfield, Mass., with 1,574; a total of 15,750 inhabitants for the 6 cities collectively in 1790 only had a population of 735,582 in 1930 while another 6 unheard-of places with no populations in 1790 had 9 million inhabitants in 1930.

Neither is it so clearly realized that Lowell, Mass., lost population between 1920 and 1930 as did Wilmington, Del., New Bedford and Fall River, Mass., and a multitude of other large American cities gained so small a number of inhabitants as to have no significance as indicating continuing growth.

For example, is Boston continuing to increase in population when it had only 33,128 more in 1930 than in 1920 and changed from 748,060 to only 781,188?

With talk on all sides about the near approach of an ultimate maximum population for the United States, about our decentralizing industry and about the enormous effect upon population distribution which is being exerted by the automobile which provides a dependable mode of rapid transportation, one hardly knows whether or not to provide for larger and larger populations within metropolitan areas.

May decentralization of industry from within our large industrial centers be assumed to cause these centers to turn more to trade, finance, and transportation, in order to occupy their inhabitants? or may their populations be expected to decrease?

I shall not attempt to answer these questions in the space allotted to me, for what would be true for one place would be ridiculous for another. However, realizing that the provision of potable water and satisfactory disposal of sewage, to say nothing of the paving of streets, provision of gas, electricity, and telephone service, refuse disposal, transportation facilities, and a multitude of other important services, is a problem which must be faced months and years before the demand has arrived, I wish to consider with you some of the more basic factors of population growth.

If the City of Cleveland of 1830 had remained constant as far as its geographical boundaries were concerned, the population curve would show in-

* Read before the Public Health Engineering Section of the American Public Health Association at the Sixty-second Annual Meeting in Indianapolis, Ind., October 10, 1933.

creases from 1,076 in 1830, to 9,090 in 1870 and decreases from 9,090 in 1870, to 1,691 in 1930 and to far less than that population in 1933.

The City of Boston of 1840 would have shown an increase from 93,383 in 1840, to 178,086 in 1910 from which time it would have shown decreases to 148,040 in 1930. And the City of St. Louis in 1840 of 16,469 would have shown increases to 32,000 in 1870 and decreases since that time to a population of 5,634 in 1930.

In other words, these cities increased in population by annexing adjacent territory and the resultant increases may be credited more particularly to population accruing to the annexed territory.

For example, the most important annexations to Cleveland occurred between 1870 and 1880 during which period territory was annexed, having, in 1880, a population of 28,235 which by 1920 had increased to 295,822 and accounted for 37 per cent of the entire population of the city in that year.

So much for the growth of the total population of cities. I have already gone rather thoroughly into this subject in an article written for the *Engineering News-Record* of February 9, 1933.

The provisions of certain community services such as water purification, sewage disposal, garbage incineration, etc., are almost entirely dependent upon total populations. However, other similar services are only of use in the area in which they are located. For example, if an area of the city such as census tract J-1 in Cleveland is provided with sewer pipes of ample size for the 6,114 people inhabiting it in 1910, and its population decreased to 49 people in 1930, census tract T-8 which increased from 59 in 1910 to 10,577 in 1930, receives no benefit from the excess facilities in census tract J-1.

Such changes are going on in our larger metropolitan communities all of the time. Careful studies of population trends should pay huge dividends in any large community.

The ability to prognosticate ultimate maximum populations is of considerable advantage in many instances, especially if determined for small geographical areas. Some approach has been made to supplying the necessary basic data for such studies in Cleveland through the " Real Property Inventory of the Cleveland Metropolitan District " in which data for 321 small geographically constant areas or census tracts have been made available.

As an illustration of the use of these data let us consider the City of Lakewood adjacent to Cleveland on the west. Lakewood in 1900 had a population of 3,355; in 1910, 15,181; in 1920, 41,732; and in 1930, 70,509. Lakewood was showing a steady and substantial increase in population and it might be prognosticated that a population of 100,000 more or less would be enumerated in 1940. However, the Real Property Inventory data of October, 1932, showed 20,572 family-units in Lakewood, 18,854 occupied and 1,718 vacant, in contrast to 19,635 occupied in April, 1930. It also showed that there were but 985 vacant lots and 25 acres of unallotted acreage. If it may be assumed that none of the area will be used for retail or for commercial enterprises and that each lot will ultimately be used for a single-family dwelling and each acre will provide 5 lots, it may be expected that only 1,110 additional family-units will be created. Thus a population of 78,000 living in 21,682 families may be assumed to be the ultimate maximum.

A study of the number of lots created each year, the number used for buildings, and the number of buildings demolished each year, aids in prognosticating population changes both immediate and ultimate.

These factors and scores of others must be taken into account when plans are made for public improvements. There is no use of providing wading pools when the population is too old to wade, schools when the child population is decreasing, or additional telephone conduits when the economic status of an area is declining. Our studies of the number of families with telephones show but 6.1 per cent of the families having telephones in the lowest economic area as contrasted to 99.5 per cent of the families in the highest economic area. In the lowest area 15.5 per cent of the families had a radio set and 14.4 per cent had one or more personal automobiles in 1930 while in the highest economic area 87.4 per cent had a radio set and 93.2 per cent an automobile. The consumption of water and the volume of sewage to be carried away, may be expected to vary enormously with economic conditions.

I was originally asked to discuss the question: "Are cities likely to grow?" You can see that I have evaded the question very completely but in doing so I have attempted to present for your consideration some of the basic reasoning necessary to answer the more pertinent question: "Is a specific city likely to grow and if so how much and in what direction?"

New York Speech Center Broadens Activities

AFTER 16 years as an institution licensed by the New York State Board of Charities, the National Hospital for Speech Disorders has moved into its new quarters, 126 East 30th Street, New York.

This is the only institution of its kind, devoted solely to the cure of speech defects, and devoted mainly to pathological conditions of voice and speech; the scope of activities is now to be broadened, however, to include special instruction in radio broadcasting, public speaking, dramatics and other features for normal speaking persons.

Keeping Up With the Demand for Adequate Pure Water*

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IN the consideration of this somewhat encyclopedic title, I shall confine the discussion to four major questions.

1. What is the probable trend of water demand among American cities?
2. What physical elements in public water supply need particular strengthening to meet this probable demand?
3. How does water works operating personnel measure up to its responsibility?
4. What may we assume to be the trend in water supply quality?

The trend of demand for water is dependent upon two factors—population growth, and variety or extent of water use.

1. There is beginning to be a reasonably wide appreciation of the fact that the United States is much nearer its population peak than was estimated a few years ago. This idea naturally must have underlying it the reservation that, just as Malthus' prophecy was upset by changes in the the industrial order, so also our present ideas as to living planes may be upset.

Assumption as to limits of population growth in the continental United States are predicated upon the maintenance of a scale of living and comfort —no lower—probably higher than at present obtains. Naturally, if some social catastrophe lowered the living standards now assumed to exist generally in this country, the capacity of the tillable areas to provide subsistence would permit a population density equal to that which obtains in certain Asiatic areas. We are all familiar with the population projection of Raymond Pearl which predicted the upper limit of the present cycle of growth at about the year 2100 with a total for the continental area of 197.274 million persons. This estimate was made before the implications of our national reversal of immigration policy were as much appreciated as they are now. The drastic change in this regard not only has reduced the annual increment of adult foreign population but has also affected the national birth rate.

The decade 1905–1915 witnessed annual net increments by immigration ranging from 400,000 to more than 800,000. In 1931 the admission-departure balance sheet evidenced a net departure of more than 10,000 persons. In addition to this a decline in births has been effective since 1924. The net result of these changes has led Thompson and Whelpton to set the upper limit of our present cycle of population growth to be reached in 1980 with a total of between 145 and 170 million persons. Taking the upper figure for purposes of this discussion, the estimated growth represents a 40 per cent increase over 1930 figures. It means naturally from a practical standpoint that some cities most favorably situated may double this rate of growth and that others in the +100,000 class

* Read before the Public Health Engineering Section of the American Public Health Association at the Sixty-second Annual Meeting in Indianapolis, Ind., October 10, 1933.

less favorably situated may show little or no growth. From an over-all water supply standpoint—upon the population basis alone—it appears rational for water supply authorities in cities where evidences of stasis or decay are not apparent, to cast about, within the next 25 years, for an ultimate increase in supply facilities from 40 to 60 per cent above present demands.

Influencing all matters of this sort, is the present national development in the direction of controlled capital investment. It is not in the least fanciful to assume that a material influence upon community and sectional growth may result from the changed emphasis upon capital input from the field of capital goods to producers' goods. We may also witness a more rapid decentralization of population masses under the influence of a social organization that limits the hours of employed labor and increases the hours of so-called leisure.

These influences upon urban growth cannot be estimated at the present time with any such degree of accuracy as to relate them directly to the questions in hand. Suffice it to say that the city with ⅓ million inhabitants at the last census period should set its planning eye, not upon 1 million population as was the order of the day not so long ago, but upon ½ million or thereabout.

In the category of varieties of water use, must be considered one factor that already has been placed upon its proper basis in most cities but which still in a few makes a rational approach to water supply problems well nigh impossible. To be exact, public water supply cannot be intelligently planned and administered unless the consumption is metered. It is an easy way out to say that citizens should have all the water they want to use, but such an attitude evidences a degree of naïveté unworthy of engineers, and more characteristic of witch doctors. Human nature is a bit rawer than many wish to admit, and one way in which the old Adam breaks through is in the wilful and inconsiderate waste of water from unmetered supplies. Fortunately here again, the current limitation of capital input has a distinct bearing. The growth of consumer demand upon an unmetered supply brings a property to the point that it is not self liquidating. Conservation of present supply must ensue.

In cities where the supply is metered the present per capita demand ranges from 100 gallons per day in areas with a 35/45 inch annual rainfall to +150 gallons in semi-arid areas. But it appears that the demand even in the higher rainfall areas is increasing as equipment for lawn spraying is more widely sold and the development of pool and garden areas increases. Likewise there is a definite increase in the use of water for personal cleanliness, and we appear to be upon the verge of use of water for home air conditioning. Doubtless the latter will make no spectacular per capita increase in demand but it, along with other increasing uses of water, will influence total community demand materially.

2. What physical elements in public water supply need strengthening to meet current or future demands? Principally those relating to continuity and uniformity of service. The point may be better understood by reference to the improvements that have gone on in the electric utility field. Not so long ago it was not uncommon for voltage to drop noticeably under heavy load conditions and for current to fail completely for long periods after thunderstorms. Now a noticeable voltage variation in a sizable city is a rarity and even during the most severe electrical storm current interruptions are only momentary. It is this reliability of service that has led to increased use of current. Many of us depend upon the

mechanical regularity of electric current to operate our timepieces and check their accuracy by the radio announcement.

No such advance has been made in water supply practice. Too frequently it is assumed that peak loads or emergencies can be met by partial—often unreasonably inferior—service. It is difficult to justify such complaisance, especially in a city where service is metered. The greater the consumer demand, the greater should be the effort to render service. But it is in this phase of water supply practice that the greatest field for improvement lies. Most noticeable is the failure, even at present rating, to comply with the requirements of the National Board of Fire Underwriters. The following phrases from their rating *Manual* summarize the requirement adequately:

> Reliable fire protection requires such duplication of all parts of a water system that with such parts out of service as may reasonably be expected to be inoperative, the system will still be able to furnish the required fire flow. The introduction of storage, either elevated and supplying the distribution system or for suction supply, offsets to a greater or less degree the need of duplication in various parts of a system, the value of the storage depending upon its amount and location; as affecting reliability of supply, it appears to be a reasonable assumption that a storage sufficient to provide fire flow for 10 hours during a period of 5 days of maximum consumption is sufficient to permit the making of most of the repairs, alterations or additions incident to the operation of a water supply system. . . .
>
> *Reliability of Pumping Capacity* on which supply is dependent, shall be on the following basis:
>
> Pumping capacity must be such, with the two largest pumps out of service, as to maintain maximum consumption and fire flow at required pressure. . . .

A water utility must produce a water meeting all hygienic requirements and having regularly a taste and odor which will produce a favorable consumer reaction. The supply must be adequate for all normal domestic and industrial demands of the city; it must meet all demands for fire protection purposes and it must not be subject to restrictions or interruptions by drought on the one hand or floods on the other. We may reasonably demand that a water utility shall apply whatever lessons it may have learned from drought experiences in providing against a repetition of water shortage, and we may also demand that it protect the consumers against water shortage at times of flood, if in its history it has records of interruptions to service by reason of plant inundation.

The volume of available water is but one of several factors which must be analyzed in considerng the necessity of plant extensions or alternate supplies. It is quite conceivable that a water utility might have at its command raw water sources materially greater than its maximum demand but of such quality that is was not a desirable source for purification. It is also conceivable that a water utility might have present sources of supply marginal as to quantity at time of drought, where the present evidence gained over the country in the 1930–1931 drought would indicate that it is dangerous to consumer comfort to use to the last drop a surface water for purification sources. We may also visualize a supply marginally adequate of a quality suitable for purification purposes, which has a sufficient record of interruption during flood periods to indicate the engineering wisdom of supplementing it with a separate and distinct source of supply not subject to flood interruptions.

We may also learn from the practices of other cities that when they reach a certain size and importance it is desirable to separate their water supply facilities into units of such size and distribution as to make possible at least a partial service from one source if the other is unavailable for a short period.

Such type of development has occurred in Cleveland, Detroit, St. Louis, Minneapolis, and Chicago. In these cases factors in production as well as distribution have led to the development of widely separated production layouts where it is still conceivable that production might have been developed from one point.

Volume of water is one factor in choice of water supply sources. Freedom from interruption by inundation is another. Separation of supply units for safety's sake is another. Degree of response to purification methods is another—all must be taken into account in developing a city's water supply sources.

In all engineering practice, it is common to protect against unforeseen matters by a factor of safety. What this factor or margin in terms of quantity should be is difficult to evaluate. The Chief Engineer of the New York City water supply has recently stated that it should not be less than 10 per cent of the available sources. In my opinion this factor should increase for cities of moderate size up to probably 25 or 33⅓ per cent of the previously recorded minima. An incipient conflagration at the height of a dry period might be checked by that margin of safety, while a "let slide" policy would have exhausted that margin. It is easy to visualize "getting by," but cities have a way of not forgetting catastrophes.

3. In the attempts to meet the demand for adequate pure water, how does water works operating personnel measure up to its responsibilty? Even in the phase of maintenance of safe quality, the record is not one in which we can take pride. Wolman and Gorman did a major service to the field of public health engineering when they made and published their study upon "The Significance of Water-Borne Typhoid Epidemics." Let us get into the heart of it. In their summary of the factors responsible for all cases of water-borne typhoid fever and dysentery in the United States in the period 1920–1929, they ascribe 54.1 per cent of the total to "inadequate control over purification methods." Under this heading they include (a) inadequate control of filtration and allied treatment, (b) inadequate chlorination, when only treatment, (c) interruption of chlorination when only treatment.

It is not important that we at present go through the details of their analysis to see whether we agree with their allocation of the causes. Grant, if you wish, that they were wrong half the time and you are still compelled to charge against bad management of water works plants one-fourth of all the water-borne urban typhoid and dysentery in the United States. Either amount represents so great a failure as to be a tremendous indictment of our water works operating personnel. Why did this happen? What can be done to correct it?

One of the principal reasons for the happening is that our municipal authorities have treated minor (sometimes major) water works operating personnel as political spoils. The qualification for selection has not been "competence for water works operating duty," but "votes delivered in the precinct." Along with this has developed the condition that men in responsible positions in the department were not allowed sufficient authority to build up and maintain an efficient operating organization. Full administrative authority to employ or to discharge subordinates is a prime requisite for successful administration of a water purification plant.

The community that puts purification plant operating responsibility upon an individual and does not give him an organization plan that carries with it control of his subordinates is inviting a

water-borne epidemic as certainly as water flows downhill. I shall not forget the sadness in the face of one purification plant superintendent who said to me "I have no time any more for research—it takes all my time and energy to keep from being thrown into the political den of lions and to produce some sort of civilized routine out of this mess of ward hangers-on that I have been given to operate the plant."

Naturally along with improvement in minor personnel and their performances, goes the need for never-ending energy and search for improvement among those in responsible charge of operations. There comes to mind the sentences of Lewis Carroll in *Through the Looking Glass:*

> "Well, in our country," said Alice, still panting a little, you'd generally get to somewhere else—if you ran very fast for a long time, as we've been doing."
>
> "A slow sort of country!" said the Queen, "Now, here, you see it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

Such is the life of a water plant executive—if he does his part to overcome the disgraceful record of water-borne typhoid during more than half the last decade, some dysentery also being ascribable to failure properly to control processes known to be effective in producing safe water supplies.

4. Finally—What may we assume to be the trend of demands for quality of water supply? A satisfactory water in present-day conception of the terms may be described as follows:

> A water supply to be of high quality, should be clear; of neutral taste; of reasonable temperature; so balanced chemically that it neither dissolves materials excessively with which it comes in contact, nor deposits portions of its mineral content thereon; and neither produces unfavorable physiological effects nor contains organisms capable of producing intestinal infection.

Correlative to the expression as to finished water quality we may set a statement as to the limiting characteristics of a source from which a public water supply should be derived:

> A public water supply should not be produced from a source containing taste producing materials that cannot be removed by reasonable methods, whose temperature frequently exceeds that of the human body; so polluted by trade wastes or natural materials from the watershed as to contain an irremovable color or irremovable mineral salt of adverse physiological effect; nor so polluted by sewage as to preclude adequate purification by well known and practicable methods.

In meeting purification problems, the water supply engineer is at the mercy of a public (the same public that permits political control of its water works), far too often indifferent to the needs of adequate sewage treatment. The callousness with which one city destroys the recreational value of a stream for its own people and at the same time makes more difficult the water purification problems of its downstream neighbor confirms one in the orthodox opinion of the fallen nature of mankind.

By and large, the extreme zeal with which water plants have undertaken taste correction deserves tribute. Their energy is commendable, but we must not, in our enthusiasm for taste corrective treatment, forget that the need of such treatment results from the unreasonable overloading of the source stream with the waste products of other communities.

Fortunately — or unfortunately — as we may choose to view it, the approach to a density limit of sewage organisms in a raw water is definite. Various expressions of this have been made, but none so definite as that of Streeter at the close of his long series of studies of performance of purification plants. Whether or not one agrees with the reasoning, he at least must defend against the indictment the use of any raw water whose average *B. coli* content

exceeds 5,000 per 100 ml. It is reasonable to expect that in any future revision, the Treasury Standard limitations will not only be set as they are now upon the quality of finished waters, but also may be suggested as to limiting average *B. coli* index of raw waters.

It is difficult to visualize a rational objection to such development in the light of the experimental evidence at hand. My own organization has already admitted the validity of this opinion, by refusing to consider as satisfactory under drought conditions an emergency supply to be taken from a stream whose *B. coli* index is above the 5,000 average and into which a number of combined sewers may discharge within a 5 mile distance above the intake. In spite of the contention of our adversaries in a rate case that the supply could be considered useful under low flow conditions, our policy has been steadfastly to regard the supply as usable as a raw water source only as an emergency reserve. More cities than now care to admit it will face the issue either of obtaining more adequate purification of upstream sewage or supplementing their present sources with raw water that conforms to the approaching standards.

The overloaded stream is less likely to manifest its condition by a continuous ill-effect upon the public health of water users than it is, at time of sudden changes in flow to furnish a water non-responsive to purification processes which are generally adequate. Such conditions may be followed by those painful, brief, and generally non-serious intestinal outbursts which involve a very large proportion of the city's population. We lack adequate data from the medical profession on the subject, although it is probable that they come into contact with only a small proportion of those affected. Certain recent research has indicated that staphylococcus and streptococcus filtrates experimentally produce intestinal disorders not dissimilar to those occurring in the Charleston, W. Va., epidemic of 1930. If this is substantiated by other observers, it becomes all the more definite that the stream with the high average *B. coli* density and the probable peak densities beyond the scope of purification processes may not be continued as a source of supply for a purification plant.

In brief, the task of keeping up with the demand for adequate pure water appears to forecast the following: The present cycle of national growth indicates an average ultimate increased demand upon water supply facilities 40 to 50 per cent above present normal demands with the usual allowance for peak and fire demands. Water supply works in general need to improve physical structures so as to effect regularity and adequacy of supply under peak demand conditions. Water works operating personnel generally suffers by reason of misuse of political patronage. Specifically, the recent record of purification plant failures distinctly challenges those in responsible positions to train themselves and their subordinates to a much higher degree of performance. Finally it is evident that a stricter limitation of raw water quality must force either improvement in stream loading conditions or the abandonment of unreasonably loaded sources of supply.

Liquid Wastes Their Treatment and Disposal*

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IN the past 30 years marked advances have been made in the treatment of liquid wastes of cities and industries, due to a better understanding of the principles of biochemistry and physical chemistry and their application to the sewage art. Further, the mechanization of the sewage works has progressed, both by design of special devices, and by adaptation of apparatus used in other fields. Such progress in the art however has probably been more helpful to the large installations than to the small. For a town of 10,000 population more or less the types of sewage works available have become more or less stabilized. The changes now occurring apply chiefly to the larger situations where economies in construction and operation show up more markedly because of the scale. More and more the yardstick of cost is being applied, because sewage disposal *per se* is always in the red and the object is to keep the losses as low as possible.

There is probably no installation in the United States or for that matter in the world, where sewage disposal makes an over-all profit. Possibly the City of Bradford, England, earned a return in one year during the World War which covered all annual charges.

Industrial waste treatment may prove a different story in some cases, such as the corn products industry, where the bottling up of wastes and recovery of the solids is said to have produced a considerable revenue. The use of save-alls in paper mills, and the recovery of fats, fertilizers, and other by-products in the meat packing industry, are examples of what has been accomplished at an earlier stage. But in many industries, treatment of the liquid wastes will probably be a charge against the manufactured product and not a source of income.

The demand for clean streams and for palatable water supplies free from tastes and odors is bringing home the need of greater care in the treatment of sewage and industrial wastes. An interesting example is the pollution of the southern end of Lake Michigan by the sewage and industries in Lake County, Ind. On one occasion, the wastes from the industries (including an oil refinery) were swept by windblown currents some 50 miles north, to produce unpleasant tastes in all the water supplies taken from that frontage.

What are some of the high points in progress in the art? To my mind, first comes the improved methods in laboratory procedure, enabling the sanitary engineer to study the problems better and to determine in advance the effect of what he proposes to do. The biochemical oxygen demand is a marked

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improvement over the old line methods —furnishing a yardstick of efficiency for processes as well as a means for testing stream purification. Likewise the introduction of pH control to the sanitary field has been a great aid in shedding light on many problems.

Next come the improvements in design made possible by the careful tests of many large works and operators generally throughout the world. Construction costs have been lowered through the combination of steel and concrete, and of the application of large scale construction methods. Not to be forgotten are the operating results, both in cost and efficiency, whereby the operators of sewage works are building up a mass of invaluable data.

The sewage art is divided now very definitely into two fields,—the treatment of the liquid and the treatment of the solid. In the last 10 years the treatment of the liquid has attained more stability, and the treatment of the solid, the sludge problem, has been advancing.

In the treatment of the liquid, the activated sludge process stands out, disclosed to the public by Ardern and Lockett, April 3, 1914. The revival of interest in chemical precipitation has awakened the old discussion of the relative merits of biological and chemical processes. Little that is really novel has been brought forward, unless it be in the Guggenheim process where zeolite is used to remove free ammonia after chemical precipitation. Dr. Mohlman will discuss the subject of chemical precipitation later. All I wish to emphasize is that there is still much to be learned from the lessons of the past. There are physical, bio-chemical and chemical laws which work. While a knowledge of pH control may help understanding and operation, it is not a panacea. A yardstick of performance is available in the BOD test. With the tools at hand the sanitary engineer will gradually determine what the efficiency is of each process, and rate it accordingly.

In the handling of solids many interesting lines have been developing. Practice, however, until recently, stopped short of one final goal, an inert mass free of all organic matter. The Imhoff tank and separate digestion stimulated by heat, have worked well in many situations. Likewise the development of mechanical means for cleaning air-drying sludge beds, and the use of glass covers have been helpful. The application of vacuum filters to dewatering properly conditioned digested sludge has been another step—Whether raw sludge can be so handled and dumped with impunity is still in doubt. However, fresh and activated sludges generally contain considerable amounts of heat units per pound of dry solids. After dewatering on a vacuum filter with the aid of a conditioner, the resulting cake may be dried and burned, with relatively small additions of fuel. The residue is inert, and practically free from organic matter. The possibilities of this procedure are being tested on a relatively large scale by the Sanitary District of Chicago, with two 25-ton dry solids installations. Such a procedure may eliminate both sludge digestion and air drying beds and make appreciable reductions in first and operating costs on a complete plant—using preliminary settling and activated sludge.

Progress has been made in the sludge disposal field. Milwaukee is an example in commercial marketing of heat-dried activated sludge as fertilizer. Smaller cities, like Grand Rapids or Dayton, are marketing heat-dried digested sludge locally. Baltimore gives away to truck farmers all its sludge as removed from the drying beds. The material has value as humus and as a fertilizer according to the type.

Much has been learned of the effect on the stream of an effluent. Where the

dilution is low, there is need of investigation to determine what secondary nuisances may arise from plant growths. Again, where combined sewers are in service, the problem of storm water control or treatment is coming to the fore in situations where some years back the question did not arise.

The coöperation of the engineer, chemist, and biologist is bearing fruit. Organizations like the New Jersey Sewage Experiment Station, the U. S. Public Health Service, the Sanitary District of Chicago, Baltimore, Milwaukee, and the Sanitary District of Indianapolis are aiding in collecting knowledge and making facts available for general use.

As the art progresses, the opportunity for a great improvement grows less, but there is still opportunity for betterment. Sanitary science provides means which can be adapted to many situations. For the large concentrations of population the sanitary engineer is now concerned with the adaptation of new or special methods, particularly where savings in cost and betterments in results may be accomplished because of the size of the problem.

Can Refuse Collection and Disposal Systems Be Improved?*

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IT is possible to look forward with a feeling of considerable hope to an improvement in the administration of those of our municipal utilities in which operation is based primarily on engineering principles. Among such may be included our refuse collection and disposal services. While in many of our cities this work is done today with efficiency and economy and a proper appreciation of the engineering principles involved, nevertheless in many of our cities and towns it is believed that these principles are not thoroughly appreciated. With the tremendous increase in the number of our technical university graduates and technological unemployment it is probable that many more technically educated engineers will participate in the routine operating services of our cities.

A substantial improvement may be obtained in cities which adopt a service charge against the householder, for the operation of the collection and disposal works, particularly if the money so received is ear-marked for the sole use of the refuse collection and disposal department. In this way this department may become independent of the appropriating power of the city government and thereby may have funds available for proper maintenance of equipment and increase in plant when this may become necessary.

While many directors and employees

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now are competent, experienced men, there often is room for substantial improvement by rigid adherence to the policy of basing all appointments solely on merit.

There is substantial room for improvement in design of our refuse disposal works. Improvements in design will tend first toward greater life of the equipment; better provision will be given to withstanding the resistance to operating conditions which cause deterioration; operating conditions will be simplified and improved. Already substantial advance has been made in this direction. With the purchasing of disposal works, based on the engineering merits of the design, a great forward step will be taken.

The greatest single advance in refuse disposal will come in improvements in operation. When the engineering principles involved are properly appreciated, incinerators for example will be operated at a uniform rate throughout the day, rather than at a high rate for a short time, followed by complete cessation of operation. Alternate heating and cooling of the refractories permits periods of low temperature operation during which combustion may not be satisfactory, and sudden temperature changes cause rapid expansion and contraction of materials and rapid deterioration of the plant in general. Basing the capacity of a plant on 24-hour operation instead of 8-hour operation, permits a great decrease in the capital invested and in the fixed charges per ton of material disposed of.

Greater attention should be given to the maintenance of cleanliness about disposal works. While this seems trite, there can be no question that rigid cleanliness in a plant dealing with material of this nature in such tremendous volumes will result (1) in a much higher morale among the operating staff; (2) a coincident improvement in the care given the physical equipment with a corresponding increase in its life; (3) more efficient operation because of the pride taken in the work; (4) greater respect for the operation of the department, among the public and the city officials who appropriate the funds required for operation. This will make it possible to secure the funds needed more easily than with careless methods of operation.

So far we have dealt only with the disposal system. The collection system is an entirely different function, but susceptible to great improvement due to the same basic factors. There is a tremendous variation in the type of equipment used for this service, thus calling for sound engineering study of the requirements of the city in selecting suitable equipment. There is apparently a greater tendency to assume that European methods are superior to ours in the field of refuse collection than in any of the other municipal services with which public health engineers customarily deal. While much has been said of the difference between the material collected in Europe and in this country, I doubt if this difference is always appreciated, and little is said of the difference in wage rates in Europe and in this country. Both of these factors should be given serious consideration in comparing foreign practice with home practice.

Possibly the greatest single opportunity for improvement in collection services lies in studying the various problems which arise, *on a unit basis* such as the work done in cubic yards, tons, man-hours, vehicle-hours, and ultimately in dollars per unit, rather than by reasoning in generalities from a comparison of the total costs of one city with those of another. Probably there are no two cities where the per capita cost of an equally efficient service using identical equipment would be the same, due to the many variable features in the problem, such as different street

layouts in the two cities, different topography, different operating personnel, and many other features.

There is no question that the efficient operation of a refuse collection service demands the driving energy of a practical man. In the larger cities there should be available the services of a trained engineer to gage the unit cost of the work and its efficiency and to make changes in district and route boundaries from time to time, as these become advisable from the standpoint of economy.

Recently we have heard a great deal regarding technological unemployment and a shorter working day. Weeks ago industry signed the President's Unemployment Agreement, called the "blanket code," but our municipalities in general have not joined the NRA. If we look back a generation we will find that our municipalities and government services in general have been the leaders in shortening working hours, and that industry has followed along behind, but has come into step after some delay.

In some cities the refuse collection service offers an example in regard to the use of a shorter working day in municipal activities. For many years in cities where the 8-hour day is required by law it has been rather common practice to divide the work of the city among the collection crews so that each crew has its daily stint. In stormy weather and during peak seasons each crew is required to clean up its district, regardless of the number of hours demanded, without additional compensation for any overtime which might be required. This is offset, however, by the practice of placing the men "on their own" and releasing them when the work is done. In this way it has been found that in some of our better organized collection services the men frequently finish a reasonable 8-hour day's work in considerably less than 8 hours. The dispatch with which the men work under these conditions, always assuming that thoroughness is insisted upon, brings about a better service at no additional cost to the tax payer.

In conclusion, the answer to the question asked in the title is "Yes." Refuse collection and disposal systems can be improved by placing the work in the hands of practical men and engineers; by taking the operation away from our boards of health, doctors and laymen, but leaving the privilege of making complaints against poor service to the boards of health; by making engineering studies of the work done by units of cost and work accomplished, rather than by comparing the work of one city with that of another.

The operating services of our municipalities can be improved and at the same time provide an outlet for the increasing number of graduates from our universities by diverting them from the construction or producing field into the operating or consuming field. If the country has reached the point economically where new construction or additional productive units are required to a lesser degree than in the past, some outlet such as this will be required for many of these technical men. A great hope for improvement in these systems lies in utilizing their trained services.

NOTE: *See also Mosquitoes Have No Place in the City, by R. E. Tarbett, page 64, January, 1934, Journal; The Practical Application of Milk Control, by J. R. Jennings, page 158, this Journal; and The Air We Breathe and the Sounds We Hear, by Joel I. Connolly, to appear in March, 1934, Journal.*

Examining Dairy Products for Members of the Escherichia-Aerobacter Group*

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A REVIVAL of interest in the significance of the presence of organisms of the Escherichia-Aerobacter group in several dairy products, has resulted in the proposal of a variety of methods for the detection and enumeration of these organisms. The solid media, such as Endo, bile salt and eosin-methylene-blue agars, and the liquid fermentation-tube media such as lactose broth, gentian violet bile, and brilliant-green bile, all appear to have their proponents. Unfortunately, little detailed information regarding the comparative value of these various media is available; and a recent survey of the methods and media presently used in laboratories and milk plants suggests that sufficient consideration is not always accorded certain essential requirements of the application of the routine colon test to such products. Our purpose is to discuss briefly some of the more important of these requirements and to detail the results obtained from a limited comparison of various methods of estimating the number of Escherichia-Aerobacter in milk.

It should be observed, at the outset, that the particular numerical range requirements of a colon test to be applied to a given product may at once eliminate from consideration certain media and certain methods. For example, evidence is accumulating that the number of colon organisms in properly pasteurized milk should be very low—not more than 10 or 20 per 100 c.c.—and the method of estimation employed should be adapted to numbers of this order of magnitude. This requirement immediately eliminates the possibility of using, practicably, any of the common plate media, since not more than 0.1 to 0.01 c.c. of milk can be plated in agar in the usual 100 mm. Petri dish. One colony on such a plate poured with 0.1 c.c. of sample is equivalent to 1,000 organisms per 100 c.c., whereas the laboratory is here interested in densities as low as 10 or less per 100 c.c. There is no doubt that the practice of plating comparatively infinitesimal portions of pasteurized milk for detection of colon organisms has served to delay desired progress in the control of pasteurization, for negative results with such plates have engendered a false sense of security on the part of those entrusted with the control. The use of fermentation-tubes and liquid media appears, at present, to be the only practical method for work of this character.

Another consideration which deserves special attention when applying a colon test to a given product is the quantitative possibilities of the method. As soon as the question of *number* of organisms enters the field, the equally important question of *precision* of the result obtained demands recognition. The error of simple

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sampling, to which all the usual methods of examination are subject, is so great that particular care must be exercised to choose a method which will yield fairly reliable results. It is perhaps not generally realized that, because of the chance distribution of the few colon organisms in the sample or dilution, no method commonly employed at present of which the authors are aware will yield results which are, with any fair degree of assurance, within 50 per cent of the true value.

This fact is brought out in Table I, which shows, approximately, the relative precisions obtainable from certain plate and fermentation-tube systems of examination. It is assumed that reasonable assurance is provided by odds of about 32 to 1, and the precisions were calculated by means of available formulae [1] on this basis. The precisions of various results obtained even from the same system may vary somewhat, so the figures given must be considered as merely rough approximations. It is to be noted that these precisions hold only when all conditions are favorable: dilutions properly chosen, samples and dilutions well shaken, and the simple error of sampling the only cause of error operating.

TABLE I

RELATIVE PRECISION OF RESULTS

System of Examination	*Odds are 32 to 1 that the most probable numbers obtained will fall within the range of approximately*
2 tubes with each of 3 or more dilutions	30 to 1,000 per cent of true number
5 " " " " 2 " " "	30 to 400 " " " " "
10 " " " " 1 " " "	40 to 250 " " " " "
Plate counts, when count is 5 to 10	20 to 200 " " " " "
" " " " " 10 to 50	60 to 150 " " " " "
" " " " " 50 to 100	75 to 120 " " " " "

It is interesting to observe that one plate count of, say, 8 colonies is a result quite as reliable as that obtained from 10 fermentation-tubes. The numerous efforts directed toward the development of selective plate methods are evidently fully warranted, in view of the promise of convenience and precision of results which the plate method offers.

As the number of organisms in the sample becomes less than about 5 per unit of quantity plated, however, the precision of the plate count falls off rapidly, and completely negative plates become numerous. Two requirements of a plate method are, therefore: (1) It should preferably yield a count of 5 or more countable Escherichia-Aerobacter colonies, and (2) it should be so selective that these colonies may be fairly surely recognized.

On the other hand, even a moderately precise fermentation-tube method must include the use of at least 5 tubes with each dilution of sample. A larger number of tubes must be used if the precision of the result is to exceed that represented by the range of about one-third to four times the actual number of colon organisms present.

A third essential to reasonable accuracy in estimating the density of colon organisms in dairy products is the practice of duplicating the tests. It may seem unnecessary to stress the importance of checks in any bacteriological work, but the physical characteristics of many dairy products and the facilities for local, undistributed multiplication of bacteria which they offer render representative sampling a problem. Those familiar with milk-slide microscopic work appreciate the difficulty of sampling due to the frequent presence

TABLE II

COMPARATIVE COUNTS OF COLON ORGANISMS ON SOLID MEDIA *

Sample No.	*Bile Salt*	*Endo*	*E M B*
59	16	22	20
60	crowded	crowded	crowded
61	310	310	300
62	18	18	8
63	33	39	122 (32 + 90?)

* Counts given are the sum of the counts from 2 plates.

of masses of colon organisms which may be broken up by manipulation, such as that of pipetting. In consequence, the practice of relying upon the results from 1 plate only, or from 1 tube with 1 or more dilutions is not to be recommended. The use of several fermentation-tubes with each dilution provides an automatic check on the results; when the plate method is employed at least 2 plates should be prepared to provide a similar check.

PLATES VS. FERMENTATION-TUBES

Plate Methods—Plates and solid media offer certain advantages, as compared with fermentation-tubes, in the estimation of the number of colon organisms in dairy products, particularly when the sample contains a comparatively large number of these organisms. The advantage in precision of results obtained from the plate method has already been pointed out. Provided a readily prepared and really selective plate medium were available, the plating procedure would frequently be the method of choice.

The lack of selectivity of the solid media more commonly used for this purpose, however, constitutes a source of error which requires careful consideration when plates are employed. Kline,[2] for example, reports:

> We have found another type of bacteria giving more or less typical "colon" reactions on Endo's media—an organism that gives a good "colon" reaction on the media, but does not possess the ability to ferment sugars with the production of gas, producing only acid. . . . Sometimes these acid-forming but non-gas-producing organisms appear in quite large numbers as shown in Table VI covering a special study of six pasteurizing plants.

TABLE VI (in part) FROM KLINE

	Raw	*Pasteurized*
Samples	88	95
Cultures	260	65
Gas formers	174	25
Acid formers	86	40

It will be noticed that about half of the cultures examined by Kline in this special study failed to produce gas and therefore failed to conform to the usual definition of Escherichia-Aerobacter organisms.

Similarly, the authors, in a study of raw milks by the plate methods, found a great variation in the proportion of typical colonies which proved to be colon organisms when different samples were examined. The media employed were a special bile salt agar, Endo, and eosin-methylene-blue agar. The samples represented raw milks supplied by different dealers; 2 plates of each medium with 0.01 c.c. of sample in each, were poured. The results from a series of consecutive samples are shown in Table II.

It will be observed that the counts of typical colonies in the 3 media check fairly well. A number of colonies were fished from each plate into lactose broth; if gas appeared, a streak was made on eosin-methylene-blue agar and resulting growth completely confirmed

by the *Standard Methods of Water Analysis* of the A.P.H.A. Table III shows the results of this procedure.

TABLE III

RESULTS OF CONFIRMATION OF COLONIES ON SOLID MEDIA *

		Bile Salt	*Endo*	*E M B*	*Total*	*Proportion*
Sample No.	59	8/10	5/5	3/4	16/19	84%
	60	7/10	—	1/4	8/14	57%
	61	3/10	1/4	3/8	7/22	32%
	62	0/10	0/3	0/5	0/18	0%
	63	0/10	0/6	0/4	0/20	0%
Total		18/50	6/18	7/25	31/93	33%
Proportion		36%	33%	28%	33%	

* Denominator indicates number of colonies examined.
Numerator indicates number of colonies confirmed.

The colonies from samples Nos. 62 and 63 were similar to the majority of those from the other samples, yet not one of the 38 colonies fished from these 2 samples proved to be Escherichia-Aerobacter. Only 33 per cent of all the typical colonies from the 5 samples were confirmed as colon organisms. Other series of samples examined in the same manner, but employing only Endo agar, yielded similar results.

Evidently the so-called "typical colon colonies" appearing in these solid agar pour plates should not too hastily be accepted as colonies of Escherichia-Aerobacter. Since the proportion of such colonies proving to be of colon organisms will vary with different samples, it is essential that a number of the colonies from each sample be actually confirmed before the count can be taken as an indication of the number of Escherichia-Aerobacter contained in the sample.

A departure from the pour-plate method, involving the spreading over the surface of a dried agar plate a small quantity of sample and then again drying the plate before incubation, has been employed by some workers. The authors have no data to offer concerning the value of this method in milk examination. Some years ago they attempted to use eosin-methylene-blue and several other agars in this way for examination of water, but with indifferent results because of the difficulty of recognizing Escherichia-Aerobacter colonies.

Fermentation-tube Methods—Many different media have been employed in fermentation-tubes for the estimation of the coli content of milk and other dairy products. Although published reports of comparative work with various media are few, there seems to be a consensus of opinion that ordinary plain lactose broth is unsuitable for this purpose. The experience of the authors with lactose broth for detection of colon organisms in milk has been very disappointing. Kessler and Swenarton [3] reported that they tried and discarded plain lactose broth, and suggested that the failure of this medium was probably due to inhibition of colon organisms by the acidity rapidly produced by other types of bacteria present. They proposed a gentian violet-lactose-peptone bile for the test. With this medium over 99 per cent of positive presumptives (gas in 48 hrs. at 37° C.) were "partially confirmed," by production of typical colonies on eosin-methylene-blue agar streaked with material from the presumptive tube.

The authors have conducted a limited series of tests for the purpose of comparing gentian-violet bile with

brilliant-green bile 2 per cent Special, a medium commonly employed for water examination. It was thought that many laboratories might find it convenient to use the same medium for water and for milk. A total of 139 samples of bottled pasteurized milk was tested by placing each of 4 dilutions (1 c.c., 0.1 c.c., etc.) of the sample in 2 tubes of each medium and incubating at 37° C. for 48 hours. The results are given in Table IV. Of the 139 samples, 55 contributed one or more positives; in no instance were all the tubes planted from one sample positive.

TABLE IV

COMPARISON OF GENTIAN VIOLET BILE AND BRILLIANT GREEN BILE

Portions of milks tested	1 c.c.	0.1 c.c.	0.01 c.c.	0.001 c.c.
10% or more gas, 48 hrs.				
Tubes of gentian violet bile	51	31	22	8
Tubes of brilliant-green bile	61	39	23	9
Gas, but less than 10%, 48 hrs.				
Tubes of gentian violet bile	6	3	2	2
Tubes of brilliant-green bile	10	3	0	1

The results agree fairly closely, the brilliant-green bile yielding a somewhat larger number of positive presumptives, particularly with the lower dilutions. The more frequent failure of lower dilutions to yield gas in gentian bile when higher dilutions yielded gas accounted, in large part, for the fewer positives with this medium.

The series of comparative presumptives described above were not confirmed, but later another series of positive presumptive tubes of brilliant-green bile were confirmed with the results shown in Table V. The system of examination employed was that of planting 2 to 5 tubes with each of 4 dilutions, 1 c.c., 0.1 c.c., etc. All tubes with gas were subjected to the confirmation procedure.

It is evident from the results shown in Table V that when raw milk was tested in the manner described any amount of gas formed in the tube was almost a sure indication of the presence of colon group organisms. Since 86 per cent of the tubes with at least 10 per cent gas, when pasteurized milk was examined, were completely confirmed as colon group organisms, the production of gas in that amount may reasonably be considered an indication of the presence of these bacteria in routine work. Indeed, in pasteurization control, the experience of the authors indicates that gas in any amount is seldom formed from 10 ml. samples taken at the pasteurizer (when properly operated) and that, in consequence, any gas found in the majority of tubes containing such quantities of pasteurized milk usually indicates some fault in the processing of the milk.

It may be of interest to note that, in the course of the confirmation of the presumptives described above, the number of confirmations was increased by 11.5 per cent by fishing a second colony from the eosin-methylene-blue plate. Approximately the same proportional increase was obtained from raw as from pasteurized samples.

A recent tendency, here and abroad, is toward more rigid requirements, as regards colon group density, for pasteurized milk. In order to determine the practicability of testing quantities of milk larger than 1 c.c., a series of milk and cream samples (all pasteurized) were examined by planting two 10 c.c. quantities in brilliant-green bile tubes, the medium being of the special strength usually employed for 10 c.c.

TABLE V

RESULTS OF CONFIRMATION OF POSITIVE BRILLIANT-GREEN BILE PRESUMPTIVES

	10 Per Cent or More Gas in 48 Hrs.	*Less than 10 Per Cent Gas in 48 Hrs.*
Pasteurized Milk: 54 samples (with positive presumptives) from 29 different pasteurized supplies.		
Number of presumptives	153	51
Number completely confirmed	132	23
Proportion completely confirmed	86%	45%
Raw Milk: 25 samples (with positive presumptives) from 20 different raw milk supplies.		
Number presumptives	112	12
Number completely confirmed	111	11
Proportion completely confirmed	99%	92%

quantities of water (20 c.c. of medium in the tube; 60 gm. of dehydrated medium per liter). A total of 100 tubes from 53 different samples showing at least 10 per cent of gas after incubation for 48 hrs. at 37° C. were subjected to the completed confirmation procedure. Every one of these 100 tubes was confirmed as containing colon group organisms. Apparently 10 c.c. quantities of sample can be tested by means of brilliant-green bile with reasonable assurance that the formation of at least 10 per cent of gas in the fermentation-tube indicates the presence of organisms of this group.

The results here recorded indicate that brilliant-green bile constitutes a satisfactory medium for the routine estimation of the number of colon group organisms in milk. Although the number of presumptives examined was not large, they were obtained from a series of many hundreds of samples which were taken from many different milk supplies in various cities and towns and which were fairly representative of the general milk supply of the Province of Quebec. The representative character of these samples compensates, in some measure, for the limited number examined.

SUMMARY

The great variation in the numbers of Escherichia-Aerobacter organisms which may be found in milk and other dairy products necessitates careful discrimination in the choice of the routine method of estimation which is best adapted to the examination of the particular product under consideration. Three requirements which deserve special notice are:

1. The necessity of choosing a method which will permit enumeration in the range of numbers of organisms to be found in the sample. There is little advantage in testing 0.1 ml. of pasteurized milk by means of a plate method when such milk usually contains only a few colon organisms in 100 ml. of sample.

2. The necessity of choosing a method which will yield results of the desired precision. The error of simple sampling is such that, when the dilution-tube system is employed for routine work, at least 5 tubes should be planted with each dilution. It is pointed out that the count on a single satisfactorily differential plate with from 5 to 10 rceognizable colon colonies is quite as precise as the result from 10 fermentation-tubes planted with the proper dilution of the sample. The search for differential plate methods for enumerating colon organisms is well warranted.

3. Whether plates or tubes are used, duplicates are advisable in order to detect gross errors in the results obtained.

Comparative results obtained from examination of milk samples for Escherichia-Aerobacter by various methods suggest the following tentative conclusions:

1. So-called "typical" colonies appearing in solid media pour-plates inoculated with milk may not be accepted as colonies of Escherichia-Aerobacter unless a sufficiently thorough examination of a large number of colonies from representative samples has proved that they may be so accepted. In the hands of the authors plates poured with neither Endo, bile salt, nor eosin-methylene-blue agar proved reliable for direct enumeration of colon organisms in milk samples, since the proportion of resulting typical colonies which were confirmed varied from zero in some samples to 100 per cent in others. It is quite probable that similar difficulties would be encountered in the examination of dairy products other than milk by these plate methods.

2. The production of 10 per cent or more gas in brilliant-green bile 2 per cent special fermentation-tubes inoculated with quantities of raw or pasteurized milk varying from 10 c.c. to 0.001 c.c. and incubated 48 hrs. at 37° C. provides reasonable assurance of the presence of Escherichia-Aerobacter organisms. This medium appears to be as reliable as gentian violet bile for the enumeration of these organisms, and is more conveniently employed in those laboratories where it is also used for examination of water samples. The percentage of such brilliant-green bile presumptives which were completely confirmed varied as follows:

Raw milk, 1 c.c. to 0.001 c.c.	99%
Pasteurized milk, 10 c.c.	100%
Pasteurized milk, 1 c.c. to 0.001 c.c.	86%

It is pointed out that since the organisms in 10 c.c. of properly pasteurized milk rarely produce gas in this medium, the production of any amount of gas from the majority of such samples of 10 c.c. or less of a pasteurized milk is usually indicative of some fault in the processing of the milk, either improper pasteurization or recontamination of the pasteurized product.

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Mother's Day—May 13

THE Maternity Center Association of New York announces its annual Mother's Day Campaign, and that Mother's Day this year is to be observed May 13. Those interested in securing aid for local groups who wish to lower maternity mortality in their own communities may apply to Mrs. Shepard Krech, President, 1 East 57th Street, New York, N. Y.

Epidemiology of Lobar Pneumonia*

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IN a preliminary study one of us [1] determined the prevalence of various types of pneumococci in the nasopharynges of persons who had been in intimate contact with cases of lobar pneumonia. Nasopharyngeal cultures of over 1,000 persons (contacts and controls) indicated that Types I and II pneumococci were much more prevalent in the nasopharynges of immediate family contacts of cases of lobar pneumonia due to the homologous organisms than in the population at large. This suggested the advisability of further study in an attempt to determine the significance of this finding. Does the case of lobar pneumonia due to Type I or II pneumococcus infect his immediate contacts; or do these types invade the nasopharynges of a family, establish themselves and ultimately produce pneumonia in one unfortunate member? An answer to at least a part of this question might be reached by first taking cultures of the family contacts of an individual who had developed lobar pneumonia. One would then remove that person to a new uninfected environment, thus exposing a new, presumably susceptible and uninfected group of contacts, and make a study of this new group. Our approach to the problem was to restrict ourselves to a study of the contacts of cases of lobar pneumonia which were due to Type I or II pneumococcus and that were taken to the wards of general hospitals early in the course of the disease. We compared the nasopharyngeal content of the home contacts of each case with the nasopharyngeal content of hospital contacts of the same case.

The hospitals of Metropolitan Boston coöperated in the study and informed us immediately by telephone whenever a case of lobar pneumonia due to either Type I or Type II pneumococcus was admitted to their wards. Our procedure was to culture immediately the new environment of the patient; namely, the hospital patients adjoining the new case (if the case was in a large ward), or all the contacts, if the new case was placed in a small 4- or 5-bed ward. This enabled us to establish the nasopharyngeal flora present in the new environment at the time of the introduction of a source of Type I or II pneumococcus. These contacts were then re-cultured at intervals as long as the contact remained unbroken, and as long as the pneumonia patient continued to exhibit Type I or II pneumococci in his sputum.

The environment from which the patient had come was studied concurrently. The family from which the case had been removed was visited, and nasopharyngeal cultures were taken from as many of the immediate family contacts as possible.

As a further index of the extent to which Type I or II pneumococcus

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TABLE I

NASOPHARYNGEAL CULTURES ON HOSPITAL PATIENT AND FAMILY CONTACTS OF CASES OF LOBAR PNEUMONIA DUE TO TYPE I PNEUMOCOCCI

	Cases	*Contacts*	*Contact Days*	*Negative*	*Positive and not Homologous*	*Positive and Homologous*	*Per Cent Positive and Homologous*
Hospital Contacts	20	61	426	38	50	1	1.6
Family Contacts	17	62	153	13	34	15	24.2

strains are transmitted from acute cases to their contacts, house officers, nurses, and orderlies working on the wards in which lobar pneumonia caused by these types of pneumococcus were being treated were cultured. These cultures were taken before exposure to the case, during exposure, and at intervals after the exposure had ended.

Several families in which the incidence of homologous carriers was high were cultured at regular intervals to discover the length of time a "healthy" carrier was likely to carry a Type I or II pneumococcus.

Various factors of the environment which might influence the transfer of pneumococci from patient to contact, such as overcrowding, low economic or social status, were noted. Similarly, variations in the individual contacts, such as age, the existence of respiratory disease, or the occurrence of acute respiratory infection, chilling of the body by exposure, etc., received attention.

The pneumococci were identified by standard mouse passage and tube agglutination technic as recommended by Cooper [2] whose specific sera from I to XXXII, inclusive, were employed. Our Type XX serum cross-agglutinated with so many types of pneumococci that it was used only occasionally, which probably accounts for our finding this type but once. The virulence to a mouse of each strain of pneumococcus that was isolated from a contact was determined. The technic and personnel for both this study and the one previously reported by Smillie [1] were the same, so that the results of the two are comparable.

The general study was continued through a 9 months period, November to July, inclusive.

FAMILY, PATIENT, AND HOSPITAL STAFF CONTACTS OF LOBAR PNEUMONIA DUE TO TYPE I OR II PNEUMOCOCCUS

The contacts of 64 cases were studied. Of these 64 cases, Type I was the infecting organism 42 times, and Type II, 22 times.

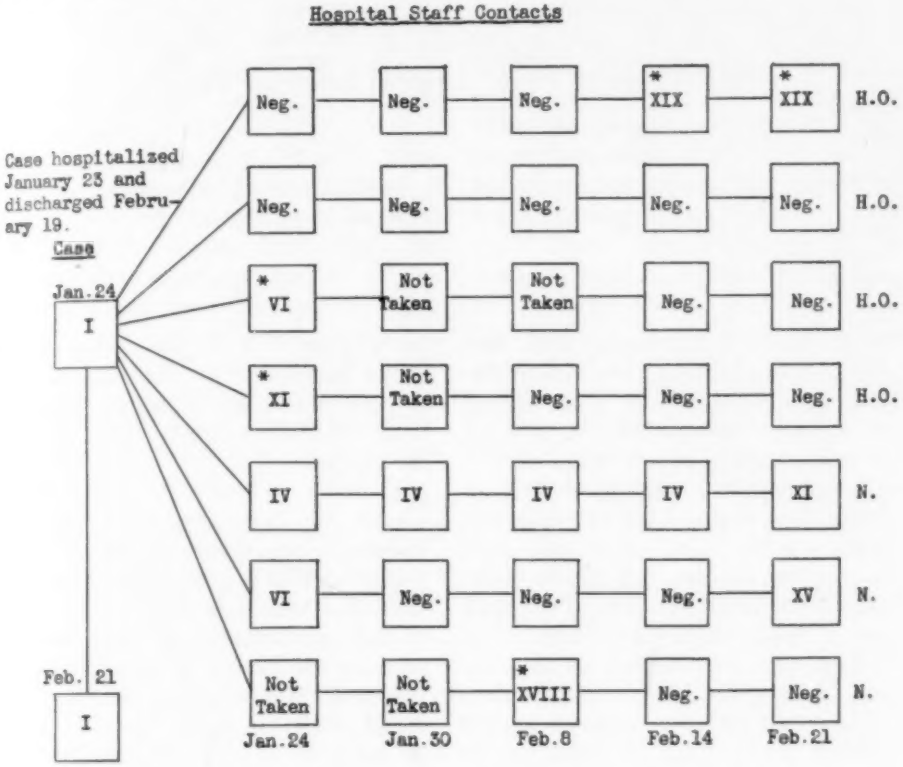
TABLE II

NASOPHARYNGEAL CULTURES ON HOSPITAL PATIENT AND FAMILY CONTACTS OF CASES OF LOBAR PNEUMONIA DUE TO TYPE II PNEUMOCOCCI

	Cases	*Contacts*	*Contact Days*	*Negative*	*Positive and not Homologous*	*Positive and Homologous*	*Per Cent Positive and Homologous*
Hospital Contacts	11	33	281	25	25	1	3.0
Family Contacts	10	37	134	9	22	6	16.2

DIAGRAM 1

PNEUMOCOCCI ISOLATED FROM THE NASOPHARYNGES OF FOUR HOUSE OFFICERS AND THREE NURSES IN CHARGE OF A WARD IN WHICH A CASE OF TYPE I LOBAR PNEUMONIA WAS TREATED


Hospital Staff Contacts
Case hospitalized January 23 and discharged February 19.
Case
Jan. 24
I
Feb. 21
I
Neg. Neg. Neg. * XIX * XIX H.O.
Neg. Neg. Neg. Neg. Neg. H.O.
* VI Not Taken Not Taken Neg. Neg. H.O.
* XI Not Taken Neg. Neg. Neg. H.O.
IV IV IV IV XI N.
VI Neg. Neg. Neg. XV N.
Not Taken Not Taken * XVIII Neg. Neg. N.
Jan. 24
Jan. 30
Feb. 8
Feb. 14
Feb. 21

*Indicates the presence of a cold at the time the culture was taken.
H.O. indicates House Officer
N. indicates Nurse.

Family contacts were considered only when they had been in contact with the patient within 7 days; and hospital patients were cultured only if they occupied contiguous beds in a large ward or were in a small 4- or 5-bed ward with the case. Thus, all contacts could be called intimate from the point of view of ease of exchange of nasopharyngeal flora by droplets.

The distribution of cases and contacts was: 61 patient contacts of 20 Type I cases; 62 family contacts of 17 Type I cases; 33 patient contacts of 11 Type II cases; 37 family contacts of 10 Type II cases; and 71 hospital staff contacts of 5 Type I and 1 Type II cases.

A summary of the results of the study of these 5 groups is shown in Tables I, II, and III. Diagram I illustrates the details of a typical study on hospital staff contacts.

The striking thing about the tables is the high percentage of homologous carriers among the family contacts, as compared to the low percentage among hospital staff or patient contacts. This difference is further emphasized when we compare the number of contact days for family contacts with the number of

TABLE III

NASOPHARYNGEAL CULTURES ON HOSPITAL PATIENTS, HOSPITAL STAFF AND FAMILY CONTACTS OF CASES OF LOBAR PNEUMONIA DUE TO TYPE I OR II PNEUMOCOCCI

	Cases	*Contacts*	*Contact Days*	*Negative*	*Positive and not Homologous*	*Positive and Homologous*	*Per Cent Positive and Homologous*
Hospital Patient Contacts	31	94	707	63	75	2	2.1
Hospital Staff Contacts	6	71	610	42	27	2	2.8
Family Contacts	27	99	287	22	56	21	21.2

contact days for hospital staff and patient contacts. Sixty-two family contacts of 17 Type I cases were exposed for 153 days and yielded 15, or 24.2 per cent, homologous carriers, whereas 61 hospital patient contacts of 20 Type I cases were exposed for 426 days and yielded only 1, or 1.6 per cent, homologous carriers. A similar relationship exists for contacts of Type II cases. Thirty-seven family contacts of 10 Type II cases yielded 6, or 16.2 per cent, homologous carriers for 134 days exposure, whereas 33 hospital patient contacts of 11 Type II cases yielded only 1, or 3.0 per cent, homologous carriers after 281 contact days. Similarly, 71 hospital staff contacts of 5 Type I and 1 Type II cases yielded only 2, or 2.8 per cent, homologous carriers after 610 days of exposure.

Another striking thing in relation to family contacts should be emphasized, namely, that one is just as likely to find homologous carriers among the family contacts of cases of Type I or II lobar pneumonia on the first day of exposure as after a week of exposure. That is, the number of contact days following the onset of the lobar pneumonia does not appear to affect the carrier rate in the home. This, coupled with the low rate of spread in hospitals, suggests that there must be some additional factor which determines whether or not a Type I or II pneumococcus becomes established in the nasopharynx of persons that are exposed to cases of lobar pneumonia due to these particular strains.

In order to study this phenomenon further, we determined to introduce a known healthy carrier of Type I pneumococcus into a group of normal persons that were free from pneumococci of this particular type, and then to measure the spread of the organism in the new, uninfected environment, incident with the culturing of a group of controls in the Wrentham State School for Mental Defectives, we discovered that an inmate, E. H., age 28, harbored a strain of virulent Type I pneumococcus in her nasopharynx. E. H. gave no history of previous pneumonia, nor of contact with a case. E. H. was in Building F, housing a group of slightly mentally retarded females, averaging about 25 years of age, so that the group was fairly similar to one of normal adults. On the campus was another building—B—with a comparable group of women at a slightly higher age level, averaging about 30 years of age. Each building was a unit, with little contact from building to building, or with the outside.

The plan followed was to culture first the occupants of Building F, in

which E. H. had been a patient for several years. We also cultured the occupants of Building B in order to establish the normal nasopharyngeal flora of the persons in the two buildings. We then transferred E. H. to Building B and cultured, at frequent intervals, her new contacts in this new environment.

Building F contained 116 girls. They were about equally divided between 3 wards in which the beds were arranged as elsewhere in the institution; the head of one touching the foot of the next one, and the rows separated by a narrow aisle just wide enough to allow a person to walk between the rows. The night time contact, therefore, could be consdered closer than would be found either in the home or in a general hospital. Building B housed 97 girls under exactly the same living conditions, so that the degree of contact in the two buildings was comparable.

The two buildings gave a total of 213 persons. Of these 103 (48.3 per cent) harbored pneumococci of various types, and 110 (51.7 per cent) did not. These percentages are compatible with the figures obtained by other workers for the normal population. Gundel,[3] in 1,114 cultures of school children, found 734 strains of pneumococci, and Smillie,[1] in 458 cultures of a cross-section of the normal population, found 212 strains. In our series of cultures from Building B and F, all of the 32 Cooper types except II, XXII, XXIII, XXVI, XXVII, XXIX, XXXI, and XXXII were recovered. Types III,

TABLE IV

TYPES OF PNEUMOCOCCI PRESENT IN THE NASOPHARYNGES OF CONTACTS WITH A TYPE I PNEUMOCOCCUS HEALTHY CARRIER BEFORE AND AFTER THE INTRODUCTION OF THE INFECTED PERSON INTO THE DORMITORY

		Type of Pneumococcus							
		July							
	Case No.	11	17	18	19	21	24	27	28
Type I Carrier	–	–	–	–	*	I	I	I	I
Contacts in contiguous beds and at same dining table	1	–	Neg.	–	*	VI	Neg.	VI	Neg.
	2	–	Neg.	–	*	Neg.	VI	VI	VI
	3	III	–	–	*	III	Neg.	IV	Neg.
	4	–	–	VI	*	VI	XXVI	VI	VI
	5	VIII	–	–	*	VIII	VIII	VIII	VIII
	6	–	–	Neg.	*	III	VI	VI	VI
Contacts at same dining table, but not in contiguous beds	7	Neg.	–	–	*	–	Neg.	–	VII
	8	Neg.	–	–	*	–	II	–	II
	9	VII	–	–	*	–	VIII	VIII	VIII
	10	VII	–	–	*	–	XI, XVI	–	XI, XVI
Contacts in contiguous beds, but not at same dining table	11	–	–	Neg.	*	III	–	Neg.	Neg.

* Type I carrier introduced on this date

VII, X, and XVIII were found most frequently, but no single type predominated. Type I was not found in Building B. In Building F, where the carrier was an inmate, 2 other girls yielded Type I pneumococcus on one occasion. It was impossible to obtain this organism from these 2 inmates on repeat cultures. Only E. H. was continually positive for the virulent Type I pneumococcus.

The culturing of the two buildings was started on June 28, and was completed on July 19, on which date E. H. was transferred from Building F to Building B, and her new contacts were then cultured at intervals. Our procedure by days follows:

July 21—Contacts in contiguous beds—Building B
July 21—Previous contacts in contagious beds—Building F
July 24—Contacts at same dining table—Building B
July 26—Contacts in same ward, but not in contiguous beds—Building B
July 26—Contacts in same building, but not in same ward—Building B
July 26—Previous contacts not in same ward—Building F
July 27—Contacts in same building, but not in same ward—Building B
July 27—Contacts in contiguous beds—Building B
July 28—Contacts at same dining table—Building B
July 28—Contacts in contiguous beds—Building B

It will be noted that we concentrated our efforts on contacts occupying beds contiguous to E. H. and to contacts eating at the same dining table. Many of the people in the contiguous beds also used the same dining table, so that some had more contact than others. As a check, cultures were also taken from time to time in the other wards in Building B and in Building F from which E. H. had come. None of these control cultures were positive for Type I pneumococcus.

The results of one group of serial cultures of intimate contacts of E. H. in her new environment are shown in Table IV. It is obvious from this table that E. H. did not infect her new contacts with Type I pneumococcus, though she continued to carry this strain throughout her stay in Building B.

Analysis of all the data, consisting of approximately 125 nasopharyngeal cultures of immediate contacts, reveals that the introduction of an individual harboring Type I pneumococci in the nasopharynx into a group of people having continued close contact with the carrier was without effect. This statement, however, is modified by the length of contact, which was fairly short, July 19–28; and by the time of the year, July—a month during which the incidence of pneumococci in the population is low, and in which little lobar pneumonia occurs. Additional important data would be secured if one repeated the Wrentham experiment during the winter months, or during an outbreak of upper respiratory disease, such as the common cold.

We have some evidence that Type I pneumococci, under certain conditions, may be transmitted through contact in the hospital. In one instance of close contact of a hospital staff member with an infected person, it would appear that a strain of Type I pneumococcus was transmitted from patient to contact and that lobar pneumonia due to Type I pneumococcus had resulted.

On March 9, a girl 2½ years old, suffering from lobar pneumonia, complicated by an empyema, was hospitalized, and Type I pneumococci were isolated from the nasopharynx, and from the pleural fluid. We made serial nasopharyngeal cultures on 7 doctors and 3 nurses who came in contact with this child. On March 20, Dr. A., who was in charge of aspirating pus from the pleural cavity, developed lobar pneumonia due to Type I pneumococcus.

Dr. B. assumed care of the child, and on March 25 a nasopharyngeal culture of his throat revealed Type I pneumococcus, but he did not develop pneumonia. The remaining 5 doctors and 3 nurses were cultured repeatedly until April 11, on which date the case ceased to exhibit Type I organisms. None of them became positive for Type I pneumococcus.

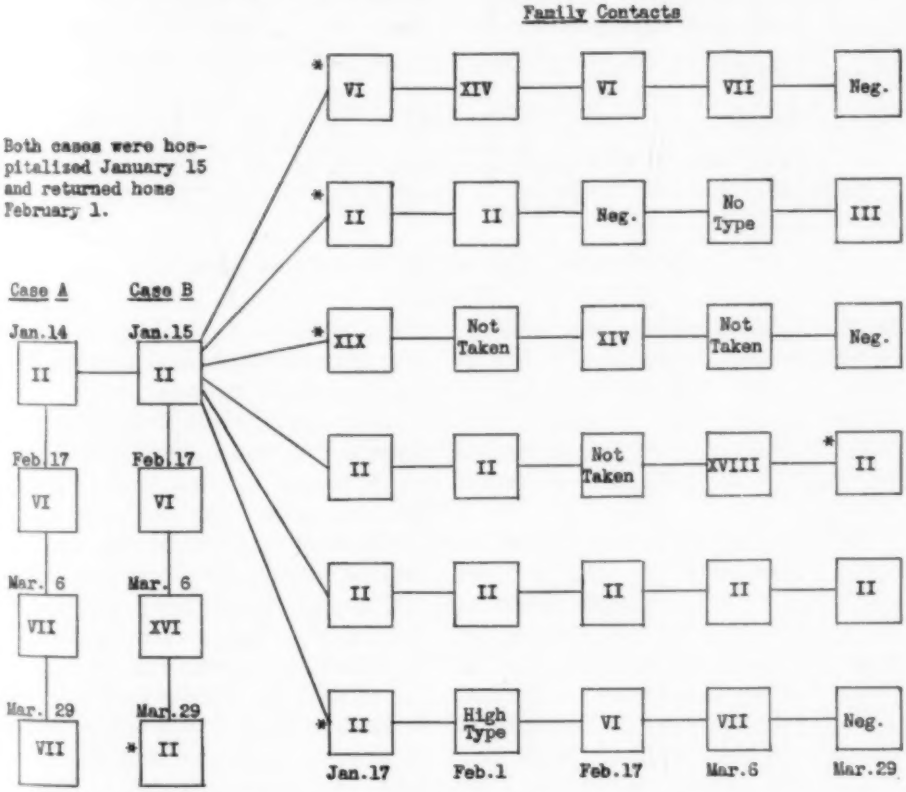
Since this child was the only known source of Type I pneumococcus in the hospital, it would seem reasonable to assume that this patient was responsible for the spread of the infection to the 2 doctors, the spread probably being influenced by the intimate contact associated with the aspiration of the pleural cavity of a small child.

Several families in which there occurred a high percentage of contacts that carried Type I or II pneumococci were studied with special care.

Family A—The mother of Family A became ill on January 14 with lobar pneumonia. The infecting organism was Type II pneumococcus. On the following day a small daughter developed lobar pneumonia, also caused by a Type II pneumococcus. Both patients were removed to a local hospital on January 15. On January 17, the 6 remaining members of the family, 1 man, 2 boys, and 3 girls, were cul-

DIAGRAM 2

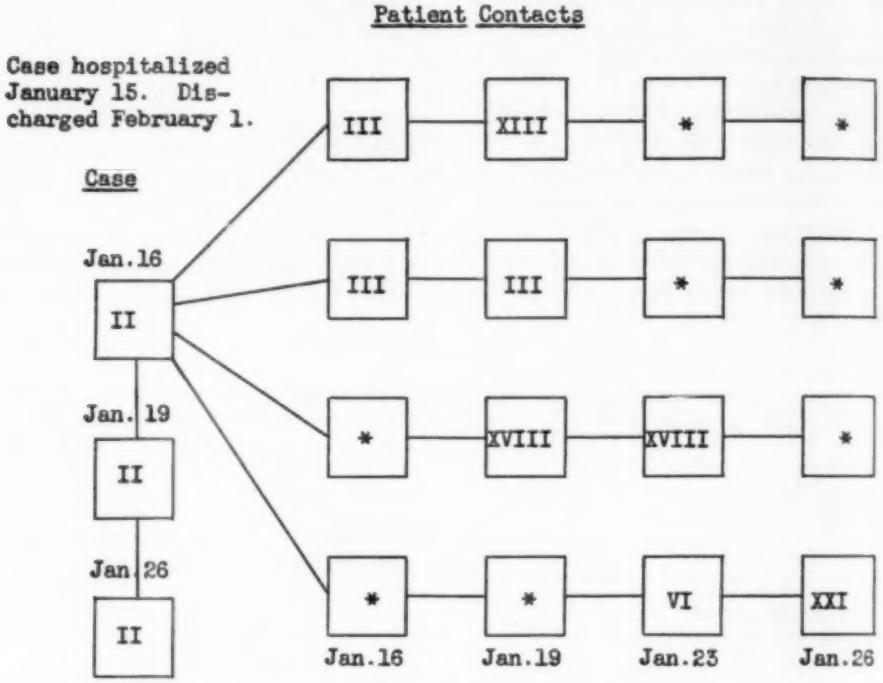
PNEUMOCOCCI ISOLATED FROM THE NASOPHARYNGES OF SIX MEMBERS OF A FAMILY IN WHICH TWO CASES OF TYPE II LOBAR PNEUMONIA OCCURRED



*Indicates the presence of a cold at the time the culture was taken.

DIAGRAM 3

PNEUMOCOCCI ISOLATED FROM THE NASOPHARYNGES OF FOUR PATIENTS OCCUPYING THE SAME FIVE-BED WARD AS A CASE OF TYPE II LOBAR PNEUMONIA



*Indicates that no culture was obtained.

tured. Type II pneumococci were recovered from the nasopharynges of 4 of these contacts. Two that carried Type II pneumococci had bad colds at the time the cultures were taken, and 2 had not had bad colds for more than a month.

These 6 contacts were recultured at about 2-week intervals until 5 serial cultures had been obtained (Diagram II). It will be noted from the diagram that 1 continued positive for Type II pneumococcus throughout; 1 yielded Type II pneumococcus only on the first culture; 1 yielded Type II on the second culture, became negative to Type II, and finally exhibited a Type III; and 1 yielded a Type II on the second and last cultures, having been negative for Type II in the meantime.

The 2 patients who had been in the hospital with pneumonia returned home on February 1, free from Type II pneumococcus. The mother remained consistently negative, but her daughter became positive for Type II pneumococcus again, after being negative for this strain on two previous cultures. It is interesting to note that during the 2½ months that the family was studied it was never free from a source of Type II pneumococcus, and that the 2 persons who became negative to Type II pneumococcus and later positive both

gave a history of an acute cold at the time the Type II pneumococcus was recovered.

The mother of Family A was hospitalized in a 5-bed ward and serial cultures were taken on the 4 patients in her new environment. These having on the average at least 4 days close contact with her, each failed to yield a Type II pneumococcus (Diagram 3).

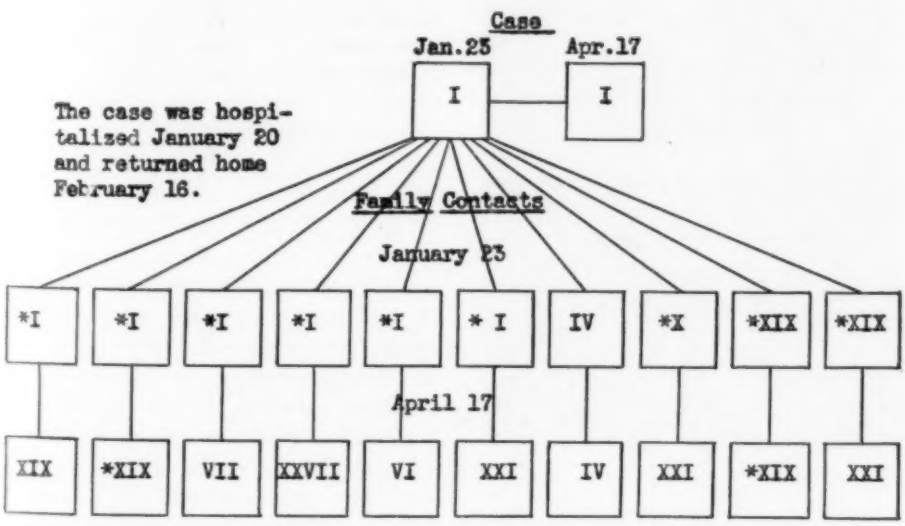
Family B—On January 23, the mother of Family B developed lobar pneumonia due to Type I pneumococcus. On January 27, 4 days after the patient had been removed to a hospital, nasopharyngeal cultures were taken on 10 home contacts, 6 of whom were found to be carrying Type I pneumococci. In this particular family, 9 of the 10 contacts, which included all 6 of the homologous carriers, had severe colds at the time the cultures were taken (Diagram 4). This family was not followed at short intervals, but when recultured April 17, nearly 3 months later, none of the contacts yielded Type I pneumococci. The original case, however, who had recovered and returned home February 16, was still positive for Type I pneumococcus on April 17.

The mother of Family B was hospitalized in a 5-bed ward and serial cultures were taken on the 4 patients in her new environment. As with Family A, the 4 patients, having at least 4 days close contact with her, each failed to yield a Type I pneumococcus.

Family C—In April, 1932, a 13 year old boy in Family C developed lobar pneumonia due to Type II pneumococcus. Five family contacts that were cultured at the time yielded 4 type II carriers. This family was not followed at frequent intervals, but the hospital records show that the child developed a chronic empyema, from which Type II pneumococci were recovered, and which

DIAGRAM 4

PNEUMOCOCCI ISOLATED FROM THE NASOPHARYNGES OF TEN MEMBERS OF A FAMILY IN WHICH ONE CASE OF TYPE I LOBAR PNEUMONIA OCCURRED



*Indicates the presence of a cold at the time the culture was taken.

continued to discharge for several months after the child returned home. The family was recultured in April, 1933, nearly a year later, and Type II pneumococci were recovered from the nasopharynges of the original case and 3 of the 4 original carriers.

THE RELATIONSHIP OF ACUTE RESPIRATORY DISEASE IN CONTACTS OF TYPE I OR II LOBAR PNEUMONIA TO PREVALENCE OF PNEUMOCOCCI IN THE NASOPHARYNX

It has been suggested that a person with a cold is more likely to harbor pneumococci than one without a cold. Our data indicate, however, that pneumococci were not significantly more prevalent in contacts suffering from colds than in those free from colds. A different picture was presented when we considered only the group of contacts of Type I or II cases which harbored the homologous organism. Of our group of 25 homologous carriers, 19, or 76 per cent, had colds at the time they were cultured. The numbers are small, but the figures are significant, and suggest further study in this direction.

Our data indicate that overcrowded living conditions in the home, and also low economic status were not factors in the establishment of carriers of Type I and Type II pneumococci.

SUMMARY AND CONCLUSIONS

1. Nasopharyngeal cultures from 264 contacts of 64 cases of lobar pneumonia due to Type I and Type II pneumococcus have been studied. The results indicate that 20± per cent of the immediate family contacts of these patients harbored the homologous strain in their nasopharynges. The hospital contacts of the same patients, however, were seldom infected (about 2 per cent). These results suggest that it is quite justifiable to treat cases of lobar pneumonia due to Type I and Type II pneumococci in the open wards of our general hospitals.

2. One experiment indicates that a healthy carrier of Type I pneumococcus does not transmit this organism to immediate contacts, even though the individuals are living under overcrowded conditions.

3. Our evidence suggests that there is some additional factor other than simple contact which determines the transfer of Type I or II pneumococci from a patient with lobar pneumonia to contacts. Nineteen of the 25 family contacts of cases of lobar pneumonia due to Type I or Type II pneumococci that became homologous carriers were suffering from acute colds at the time the cultures were taken. Positive cultures were found as frequently on the first day of exposure as after a week. This evidence suggests that family epidemics of colds may be a factor which determines the transfer and establishment of Type I and Type II pneumococci from the infected to the uninfected.

4. Carriers of Type I and Type II pneumococci, when once established, may continue as carriers of these strains for a considerable period of time without giving rise to lobar pneumonia in the carrier or his contacts and without producing a second group of carriers.

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DR. ROSENAU RECEIVES SEDGWICK MEMORIAL MEDAL

AT the Indianapolis Annual Meeting the Sedgwick Memorial Medal for distinguished service in public health was awarded to Milton J. Rosenau, M.D., of Harvard Medical School.

The presentation speech by Professor E. O. Jordan, Chairman of the Sedgwick Memorial Medal Committee, was as follows:

Milton J. Rosenau, M.D.

"It is my privilege, as Chairman of the Committee on the Sedgwick Memorial Medal, to announce the award of this medal for distinguished service in public health to Milton Joseph Rosenau of the Harvard Medical School. The award is made on the basis of Dr. Rosenau's long and fruitful career in the field of public health, for his remarkably successful 10-year administration of the Hygienic Laboratory of the U. S. Public Health Service where he carried out pioneer investigations on anaphylaxis, for his practical work on disinfectants and on the pasteurization of milk, for his numerous original contributions to bacteriology and epidemiology, for his wise and inspiring participation in coöperative research upon influenza, pneumonia, and poliomyelitis, and especially for the service he has

rendered public health workers throughout the world by his classic book, *Preventive Medicine*. This award is peculiarly appropriate since Dr. Rosenau and Professor Sedgwick were intimately associated in the organization and direction of the pioneer Harvard-Technology School of Public Health."

Dr. Rosenau has been a member of the American Public Health Association since 1909, and is a Charter Fellow.

CLEAN FOOD, CLEAN HANDS, CLEAN DISHES

THE recent outbreak of amebic dysentery, which has caused more than 20 deaths, and which has spread to more than 100 communities throughout the country during the past few months, points to a task demanding the serious attention of all health departments: that of eliminating insanitary practices in the dispensing of food and drinks.

Amebic dysentery [1] first broke out in a Chicago hotel, where it was traced to food handlers.[2] The disease spread rapidly to other food handlers and thence to guests of the hotel, many of whom were visiting the Century of Progress Exposition, and it was carried back to more than a hundred widely scattered communities.

This is one example of what can happen when purveyors of food and drinks are not required to uphold high standards of sanitation, and when there is inadequate medical examination and supervision.

It is well known that in most restaurants, soda fountains and other public eating places, the basic principles of sanitation are not generally observed. No food handler, without first washing his hands thoroughly with soap and water, should serve a customer. How many do it? No dish should be used for serving food or drinks without first being thoroughly cleansed "in a solution of soap or soda or suitable cleaning powder in hot water followed by a thorough rinsing or spraying or immersion in clean boiling water (212° F.) for a period of 1 minute, or in hot water of a temperature of not less than 180° F. at all times when used for purposes of sterilization, for a period of 2 minutes; by sterilization with live steam, or by some other equally effective method approved by the Department of Health." [3] What proportion of utensils used in public eating places, especially soda fountains, are washed in this way?

About 92 per cent of all communicable diseases are transmitted through the mouth and nose. Surely there is no better place to break the chain of saliva-borne and food-borne infections than at eating and drinking places. Transmission of disease by food and drink dispensers will end when the public demands that all food and drinks be served by healthy attendants with clean hands, in clean dishes, and health departments take vigorous action to enforce sanitary codes.

Health departments can help more than any other agencies in educating the public to demand that sanitary laws be strictly obeyed. This demand must come from the public. It is because of public apathy that sanitary laws now on the books are not more generally enforced.

Years ago the public accepted the common drinking cup. We believed that unnecessary sickness and death was the result, but the public did not seem to care. The public did not understand; that was the real reason it tolerated this deadly disease carrier. When health departments convinced the public of the awful price of the common drinking cup, action was demanded for its abolishment.

However, the common drinking cup has never really been abolished. We still have it, though not in the same form as before. Now it is in the form of glasses, dishes, and tableware inadequately cleansed between servings. Go to almost any soda fountain, in any city; watch the attendant pluck a glass from the counter, swish it about hastily in a basin of muddy-looking tepid water, rinse it quickly in cold water, then use it to serve another customer.

That glass is worse than the common drinking cup! Its superficial washing has served only to bring it into contact with germs from many other glasses "washed" in the same water.

Influenza, the common cold, tuberculosis, pneumonia, scarlet fever, diphtheria, whooping cough, and Vincent's angina,[4] are among the principal diseases that can be transmitted by unclean eating utensils. Pathogenic organisms are not removed by common methods of washing. After they are used and hand washed, more than 20 per cent of the organisms remain adhering to eating and drinking utensils.[5]

Clean food, clean hands, clean dishes: These three hold great hope for the control of saliva-borne infections.

To educate the public, to demand sanitary practices in the dispensing of food and drink in restaurants, soda fountains, and other public eating places, there has been organized in New York City The Committee for the Study and Promotion of the Sanitary Dispensing of Food and Drinks.

This committee is urging the public, in its own interest, to follow four courses of action when eating in public:

1. Decline dishes, cups or glasses that are obviously unclean.
2. Quietly protest to the management against all insanitary practices observed.
3. Commend the management of public eating places that uphold high sanitary standards.
4. Report by name and address to the Board of Health, all public eating and drinking places violating high sanitary standards.

Endorsement of the purposes of the committee has already been given by many leaders in civic, industrial and public health fields.

NOTE: Dr. Alec N. Thomson, Secretary of the Public Health Committee of the Medical Society, County of Kings, is chairman of the Committee. Homer N. Calver, former editor of this JOURNAL, is executive officer.

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BOVINE TUBERCULOSIS IN THE BRITISH ISLES

DURING the last few years the inhabitants of the British Isles seem to have become thoroughly aroused over the danger of bovine tuberculosis to human health. Much of this is apparently due to the report of the People's League of Health in 1932, an organization which seems to have been brought into being by Miss Olga Nethersole, who got together a committee of which the leading English journals spoke in the highest terms. Their report was thorough and an eye opener. Since that time the general findings have been endorsed by Sir George Newman and given official sanction. This history is somewhat surprising in view of the fact that the question of bovine tuberculosis and its relation to human health was brought to the fore at the Congress on Tuberculosis held in London in 1901, following which the English Royal Commission on Tuberculosis, which has done such excellent work, was appointed.

The Germans appointed an Imperial Commission, which after struggling vainly to support Koch's contention as to the lack of danger to human health from bovine tuberculosis, finally agreed to pretty nearly everything which we now know to be true. While bacteriologists, doctors and veterinarians in England, the Scandinavian countries, France, and even in Germany, had held that bovine tuberculosis was a menace to human health, we must say emphatically that the first positive proof of this was given from the Laboratory of the State Live Stock Sanitary Board of Pennsylvania early in 1902, though at the London Congress alluded to a paper from the same laboratory was read on the subject and a verbal report given of many cases of human infection from bovine sources, all of which seems to have escaped the notice of the English writers, with one or two exceptions.

The latest exposition of the subject is given by Savage.[1] He reiterates what we have taught in America for many years; namely, that the bovine tubercle bacillus belongs to the same species as other forms of the germ, having acquired its peculiar characteristics, probably by residence in the bodies of cattle. He combats the statement, which is not much heard in America, that the bovine strain is less virulent for man than the human, and says correctly that many cases of generalized tuberculosis are due to the bovine strain.

Most striking are the figures calculated from the tables of the Registrar-General of England, showing that from 1920 to 1931 inclusive, there have been 25,166 human deaths in England due to the bovine tubercle bacillus, not to mention the many thousands of cases of crippling and disablement from the same germ. Another table demonstrates, what has been taught so long in this country, that bovine infection takes place during the milk consuming years—1 to 5. He repeats the statistics given by the People's League of Health, and since, officially, showing that about 40 per cent of the cattle of England and Scotland are reactors to tuberculin and estimates that about 2½ per cent of them are infective. Udder tuberculosis is most dangerous from the human standpoint, though the pulmonary form is most dangerous to other cattle.

We have commented on the Manchester situation in which laws concerning pasteurization failed by a popular vote. In view of the statements that most of the herds of England contain from 40 to 50 per cent of reactors, that the milk is sold without supervision or pasteurization, and that there are no legislative measures which deal with the reduction of bovine tuberculosis, we cannot but stand aghast, though it is not entirely news to us.

Almost coincident with this Mitchell Lecture comes a Memorandum [2] and a Report [3] concerning the situation in Scotland, which is admittedly in a bad case even in England. In Scotland, Glasgow appears to have the worst record of any city. The report points out that the bulking of milk as now carried on increases the danger of infection, over 30 per cent of positive results having been obtained from large bulk supplies, while the lowest incidence of infection is found in the samples obtained from small dairy farms. Savage [1] defends the bulking of milk, arguing that the dilution decreases the number of organisms found in a given sample as compared with the badly infected units which contaminate the bulk milk. It is pointed out in the Memorandum that non-pulmonary tuberculosis is preëminently a disease of childhood, that 70 per cent of the patients become infected under 15 years of age, and that in 90 per cent one or the other of three forms—bone and joint infection, disease of the abdomen, or of the cervical glands—become manifest.

Dr. Blacklock [4] indicates that approximately 80 per cent of abdominal, 35 per cent of bone and joint, and 64 per cent of cervical gland tuberculosis in Glasgow, where he made his investigations, are of bovine origin. Non-pulmonary tuberculosis still accounts for more than 4,000 cases and 1,000 deaths annually in Scotland, of which 900 cases and 300 deaths occur in the City of Glasgow.

We are glad to note in this report a strong statement concerning pasteurization, holding, what we have demonstrated so clearly in America for a number of years, that it is the greatest single preventive of bovine infection we have, and that there is no impairment of the nutritive qualities of the milk.

In America we are fortunate with respect to control of bovine tuberculosis, largely owing to the activities of our Bureau of Animal Industry. The most recent compilation [5] gives the death rate from respiratory tuberculosis and other forms from 1900–1932 inclusive, with some figures for 1933. In 1918, intensive testing of cattle began in many of our states, and in some, earlier (Minnesota, 1904, Wisconsin, 1911). The summary for the United States shows that the death rate per 100,000 for tuberculosis had generally decreased from 1900 to 1918, although in some areas there was a slight increase. From 1918 to the present, there has been a marked decrease in the tuberculosis rate, reaching for 1932, 56.6 for respiratory tuberculosis, and 6.4 for other forms; during that time, 115,170,388 cattle were tested and 2,693,570 reactors removed from herds. There have been other factors working, prominent among which is the increased pasteurization of milk, but when all is said and done, the eradication of tuberculosis from herds must be given due credit for the part it has played in the remarkable improvement which has taken place.

We feel a justifiable pride in the record made. We congratulate our Bureau of Animal Industry upon its excellent work, and would be glad to see the National Tuberculosis Association take an active part in this aspect of tuberculosis control.

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LETTER FROM GREAT BRITAIN

APPROPRIATIONS AND ESTIMATES

In conversation with American colleagues, one of the questions most frequently put up to me has reference to the amount of "appropriation" for health purposes. Always I try very hard to avoid having this question asked, and always, although I rarely succeed, I try to avoid answering it. The reason for these evasions is that the method of appropriation, as it is understood in the United States, is not followed here, and it is so very difficult to explain just what the process is. Moreover, it is practically impossible to name a figure that would actually represent the amount expended on health works, for the reason that the group of activities coming within the purview of the health officer in Britain is not quite comparable with those under the charge of his colleague in the United States.

Further, between districts of various classes in this country there are differences, and the expenditure in one area may appear less than in another, merely because some particular type of work that is dealt with in the health department in one is the responsibility of the officer of another department in the other.

Probably nowhere are differences so marked as in the metropolis, and nowhere is the difficulty greater of giving an indication of the amount devoted to health work throughout the county as a whole, or in various of the 28 boroughs or cities into which the metropolis is divided for local government purposes. For the assistance of those concerned to discover expenditures and to make comparisons, the London County Council issues annually, by way of appendix to their annual report, a collection of tables particularizing a number of matters. From the point of view of the health worker the most interesting of these is that headed "Expenditure of metropolitan borough councils falling on the rates" in the particular year. In this the equivalent rates in the £ are shown in regard to each borough, and in respect of a number of matters.

LONDON HEALTH FINANCE

The variations to be noted in every single branch are astonishing, and without explanation or knowledge of circumstances and conditions in the various areas, conclusions entirely erroneous would be formed. Take the treatment of tuberculosis for example. Here the expenditure practically everywhere is trivial, amounting only in three boroughs to a rate of over one penny in the £.

To account for the variations there are a number of explanations: the size of the borough and its population; the circumstances and condition of the inhabitants; the trades carried on; the amount of work done by voluntary bodies; and so forth. In connection with the lowness of the figure—the smallness of the appropriation if you like—in all cases the point to be borne in mind is that sanatorium provision and treatment are not included, this being the business of the London County Council. The position in regard to maternity and child welfare is interesting also, the amount expended in terms of rates in the £ varying from 0.2 penny to 7.7 pence. The higher expenditure, as might be expected, is incurred in the poorer areas; the lower in those of a higher class, the City of Westminster (0.2 penny), St. Marylebone (0.6), for instance.

Curiously enough also in the matter of this work, all the advantages are on the side of the high-class boroughs, since whereas in them voluntary organizations are active in assisting the municipality and in this way reducing the burden on the rates, in the poorer areas voluntary workers are few and far between, and the scheme is entirely an official one paid for out of the rates. Further, it must be remembered that in no case is the amount spent on health work for the benefit of school children included. This is an activity exclusively in the hands of the London County Council as education authority, and information as to the amount expended upon it must be sought for in the accounts of that body. All of which does not make it any easier to understand or to explain the situation in regard to health appropriations.

A CENTURY OF FACTORY HYGIENE

Though it is some months since it appeared, I find I have not yet referred to the report of the Chief Inspector of Factories and Workshops for last year. This is all the more regrettable as the year 1932 marks the hundredth anniversary of the appointment of the first government inspector of factories. It was after the passing of the Factory Act of 1833 (entitled "An act to regulate the labour of children and young persons in the mills and factories of the United Kingdom") that the inspectors, four in number, were appointed. Each inspector had power to appoint "superintendents" or "sub-inspectors." In addition to, himself, writing a most fascinating historical note by way of introduction, Mr. D. R. Wilson, the chief inspector—whose first annual report it is, by the way, since taking up the post in succession to Sir Gerald Bellhouse—includes reviews on various aspects of the work by Miss Taylor, Mr. Lauder, Dr. Bridge, and other members of the inspectorate.

In no branch of the work has the progress made during the century been greater than in health. Writing with regard to it, Dr. Bridge provides a note of extreme interest, showing the advances made in each of the main periods in which certain particular acts were operated or events, like the War, enacted. Naturally, of course, he finds it quite easy to show that very much of what has happened was anticipated at the very beginning of the era. The individual to whom credit is given for having foreseen the trend of events was a Dr. Thackrah of Leeds, who, in 1831 published a small book on the effects of the principal arts, trades and professions.

In the first period, which extended from 1833 to 1878, in which latter year new legislation came into operation, Sir John Simon, to whom preventive medicine the world over owes so much, was medical officer of the privy council, and very much to the fore. In a special report in which he appeals for improved conditions in factories, more particularly in regard to ventilation, he employs a phrase, which must have been used very frequently in the years that followed, to the effect that "the canker of industrial diseases gnaws at the very root of our national strength." Following this report, provision was made, among other matters, for modifying the hours and meal-times of children and young persons.

DICKENS AND THE LEAD WORKER

In the period of 1879–1894, the benefits of legislation giving power to require exhaust ventilation, by means of a fan, for the removal of dust likely to be injurious to health, and to obtain better sanitary conditions, were enjoyed. The employment of children in certain occupations and trade processes was forbidden, and in 1891 appeared an act in which specific attention was given to compel the introduction of methods

designed to prevent industrial diseases.

Curiously it was not till 1879 that there was reference to lead poisoning, and on this, naturally, Charles Dickens had something to say, particularly in regard to cases in which women were allowed to work in white lead factories with "naked feet" and without respirators. Dickens apparently, at the time, had a feeling that if safety for women lead workers was to be found, it was on the American side of the Atlantic it must be sought, for, says he, "American inventiveness would seem to indicate that before long white lead may be made entirely by machine; the sooner the better." The practicability of making white lead by machinery is not yet, of course, completely established; nevertheless, as Dr. Bridge shows, direct pulping of white lead in oil, eliminating the drying and grinding processes, has been in the last decade the prime factor in the reduction of lead poisoning.

In regard to lead, among other matters, Dr. Bridge pays tribute to the work and memory of Sir Arthur Whitelegge, whose appointment as chief inspector in 1896 "marks a definite stage in the development of the medical work of the department," and of Sir Thomas Legge, who was appointed first medical inspector in 1898. Medically big developments followed the appointment of these two men, many industrial diseases and conditions in industry calling for attention being noted by them and brought under control.

The period 1901–1913 was a busy one from the medical point of view, closer attention being given to lead poisoning and steps taken for dealing with anthrax. In the war period, 1914–1918, Dr. Bridge believes came realization for the first time that "conditions special to the occupation were not the only cause of industrial disease, but that other factors—fatigue, undernourishment, and other conditions met with both inside and outside the time of employment—were as important in the production of illness as those produced by the materials handled."

FACTORY HYGIENE IN THE FUTURE

Extraordinary strides were made in relation to welfare work, and both during and immediately after the War, the practice of appointing whole- or part-time works doctors spread very rapidly. The medical staff of the department was also enlarged, and this process of enlargement was carried over into the period 1919–1931. Discussing progress and operations in these years, Dr. Bridge notes especially works done in relation to fibrosis of the lung and cancer. In regard to the latter, he mentions the discovery of the high incidence of scrotal epithelioma among cotton mule spinners, and the demonstration by Dr. Henry of the department that the introduction of mineral oil into the lubricant for self-acting mules coincided with the increased incidence. The further discovery was made that sufficient exposure to pitch, tar, mineral oil and compounds, products or residues of these, will, in a certain percentage of persons, produce skin cancer.

That the post-war period has had anxieties apart from these two conditions the review of Dr. Bridge shows. This is particularly the result of the introduction for use in industry of chemicals of a complex nature, used as solvents of cellulose and in the manufacture of synthetic compounds, for example. New industries have brought new problems, while many of the old ones still remain unsolved or in need of close observation. It is inevitable in an age of rapid progress with modern methods replacing older ones, and completely new trades and processes springing up, that this should be so, and no doubt Dr. Bridge and those with him, and those who come after, will be no less alive to the need for watchfulness, and no less capable of recognizing risks

and devising methods of coping with them than those who went before.

The annual reports of the Chief Inspector of Factories for Great Britain is a publication always of interest to workers in the field of preventive medicine; that for 1932, because it relates to a period so extended and treats of matters so very numerous and important, is likely to provide an interest much more abiding than others of its predecessors.

CHARLES PORTER, M.D.

London

PRESIDENTIAL CORRESPONDENCE

November 23, 1933.

The Honorable
The Secretary of Agriculture
Washington, D. C.

My dear Mr. Secretary:

Members of the American Public Health Association are actively interested in the efforts of the Agricultural Adjustment Administration to improve the economic status of dairy farmers in this country through milk marketing agreements. We recognize that desirable standards of cleanliness and safety of this most important food can not be maintained where farmers continue to receive for their product less than the cost of production.

I wish, therefore, on behalf of the public health authorities in this country, to commend your efforts to place dairying upon a sounder economic basis. We have noted with interest also the provisions of Federal milk marketing agreements that milk dealers agree to all public health and sanitary requirements for their product. While the marketing agreements are designed primarily to meet an emergency situation in the economic aspects of this problem, we feel they will fall far short of their potential good to the public unless they are used also aggressively to promote the sanitary quality of milk. As you know, there are still many tuberculous cows in dairy herds. Contagious abortion assumes increasing importance from year to year as a public health menace. Milk supplies for many areas still fall short of desirable sanitary standards.

The Federal marketing agreements provide for restriction in the production of milk. I feel it my duty to urge upon you that you consider the desirability, in any plan of production control, of eliminating milk from diseased cows and milk of low sanitary quality. In other words, with an excess of milk available it seems sound, from the economic as well as the health standpoint, to keep off the market all milk from diseased cows and milk produced under insanitary conditions.

The health authorities of this country believe that there would be no real surplus of milk if all persons availed themselves of the amount necessary to promote the optimum growth and nutrition, not only of children but of adults. We are glad, therefore, to join with you in any steps to promote the amount of milk consumption. At present the people of the United States are consuming daily less than half the amount of milk which our present knowledge convinces us should be used in the interest of health and with due regard to economy in the family diet.

If the American Public Health Association can be helpful to you in furthering the purposes which I have outlined please indicate to me how this can be done.

Yours respectfully,

HAVEN EMERSON, M.D., *President*
American Public Health Association

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Adjustment Administration
Washington, D. C.

December 13, 1933.

Haven Emerson, M.D., President,
American Public Health Association,
450 Seventh Avenue,
New York City, N. Y.

Dear Dr. Emerson:

This acknowledges receipt of your letter of November 23, addressed to Secretary Wallace, and discussing the efforts of the Agricultural Adjustment Administration to improve the economic status of dairy farmers.

You refer to the fact that milk supplies for some cities will fall short of the desirable sanitary standards, and urge the elimination of milk from diseased cows and milk of low quality from dairy markets. In this connection, it will be of interest to you to know that a committee representing the Department of Agriculture now has under consideration a plan of production control. It has as yet not been definitely decided what the final steps in this plan will be, but it is believed that the eradication of tubercular cattle, and, possibly, the elimination of cows otherwise diseased will be a part of the program.

In the several Marketing Agreements provision is also made for the consumption promotional program, and existing Agreements have been modified and new Agreements are so written that it will be possible for recognized charitable institutions to obtain milk at a low price figure.

Your offer of assistance is greatly appreciated.

Very truly yours,

E. W. GAUMNITZ,
Principal Agricultural Economist,
Dairy Section.

STANDARD METHODS OF MILK ANALYSIS, 6TH EDITION

THE changes and additions in the new edition of Standard Methods were summarized in the April, 1933, issue of the American Journal of Public Health. The new edition is in press and will be available after March 1. It will contain 88 pages, bound in hard covers with waterproof cloth. The price is $1.00.

ASSOCIATION NEWS

63rd Annual Meeting A.P.H.A.
5th Annual Meeting Western Branch

THE American Public Health Association announces that its Sixty-third Annual Meeting will be held in Pasadena, California, September 3–6, 1934.

The Western Branch of the American Public Health Association, with a membership of more than 1,200 from eleven western states, will hold its Fifth Annual Meeting at the same time.

Dr. J. D. Dunshee, Health Officer of Pasadena, has been appointed Chairman of the Local Committee on Arrangements. He will be assisted by Dr. John L. Pomeroy, President, and Dr. W. P. Shepard, Secretary of the Western Branch, and other prominent public health authorities on the west coast.

Royal Sanitary Institute Meeting and Health Congress

THE Executive Board wishes to call attention to the meeting of The Royal Sanitary Institute which is to be held in Norwich, England, from May 15 to May 20, 1934, and to the Health Congress to be held under the auspices of the Royal Sanitary Institute at Bristol, England, July 9–14, 1934; and asks that any members who plan to attend, or who may be in England at that time and can attend, will notify the Executive Office so that they may be appointed official representatives of the Association.

NEW MEMBERS

The following list includes applicants who have been approved for membership in the A.P.H.A. by the Sub-Committee on Eligibility. These new members have requested affiliation with the sections indicated, and action by the Section Councils will follow.

Health Officers Section

Norman C. Bullock, M.D., City Hall, Rockford, Ill., Commissioner of Health

Bertrand F. Drake, M.D., 425 Beechmont Drive, New Rochelle, N. Y., City Health Officer

George B. Edwards, M.D., Darlington, S. C., County Health Officer

Dr. Thomas J. McCamant, 209 S. Campbell, El Paso, Tex., Director, City-County Health Unit

Howard Morrow, M.D., 384 Post St., San Francisco, Calif., President, Calif. State Board of Health

Samuel B. Ross, M.D., Hotel Roosevelt, New York, N. Y., Medical Inspector, City Dept. of Health

Lee A. Stone, M.D., Box 56, Madera, Calif., County Health Officer

W. Bradford Walker, M.D., Cornwall, Conn., Health Officer

Laboratory Section

Earle K. Borman, M.S., State Dept. of Health, Hartford, Conn., Assistant Director of Laboratories

Frederick D. Carr, 73 Main St., Batavia, N. Y., Director, Genesee County Laboratory

Caryl C. Carson, M.S., 166 Freeman St., Hartford, Conn., Chief Chemist, Bureau of Laboratories, State Dept. of Health

Stephen H. Curtis, M.D., 80 First St., Troy, N. Y., Director, Leonard Hospital Laboratory

Robert B. Dienst, Ph.D., 5649 Woodlawn Ave., Chicago, Ill., engaged in Amebic Dysentery Survey, Chicago Board of Health

Michael Grimes, Ph.D., M.S., Dept. of Dairy Bacteriology, University College, Cork, Irish Free State, Dairy Bacteriologist (Associate)

Ernest B. Hanan, M.D., A.B., 462 Grider St., Buffalo, N. Y., Director of Laboratories, Buffalo City Hospital

Cyril K. Johns, M.Sc., Central Experimental Farm, Ottawa, Ont., Canada, Dairy Bacteriologist, Dominion Dept. of Agriculture

John E. Kieffer, 206 Huntington Ave., Buffalo, N. Y., Graduate Student (Associate)

I. A. Merchant, Ph.D., D.V.M., Yale School of Medicine, New Haven, Conn. (Temporarily on leave), Professor of Veterinary Hygiene, Iowa State College, Ames, Ia.

Julius Pincus, M.D., 250 W. 75 St., New York, N. Y., Director of Clinical Pathological Laboratory

Celia Rubin, 62 W. 91 St., New York, N. Y., Student (Associate)

Joseph R. Sanborn, Ph.D., 133 Ridge St., Glens Falls, N. Y., Bacteriologist, Research Division, International Paper Company

Anna M. Stuart, M.D., 656 Park Place, Elmira, N. Y., City and Chemung County Laboratory Worker

Public Health Engineering Section

William McL. Bingley, B.E., 3623 Spalding Ave., Baltimore, Md., Assistant Sanitary Engineer, Chlorine Institute

Robert W. Kehr, C.E., U. S. Public Health Service, Cincinnati, O., Assistant Sanitary Engineer

C. H. Young, S.E., Trust Bldg., Meadville, Pa., District Engineer, State Dept. of Health

Food and Nutrition Section

Joy C. Wickham, V.S., 1905 Cypress St., Cleveland, O., Milk Inspector

Child Hygiene Section

William J. Ryan, M.D., Pomona, N. Y., Superintendent and Medical Director, Rockland County Tuberculosis Sanatorium.

Public Health Education Section

Adelheid Arfsten, A.B., 600 Stockton St., San Francisco, Calif., Pacific Coast Welfare Supervisor, Metropolitan Life Ins. Co.

Muriel F. Bliss, C.P.H., 697 Park St., Attleboro, Mass., Health Education Research Worker, Mass. Inst. of Tech.

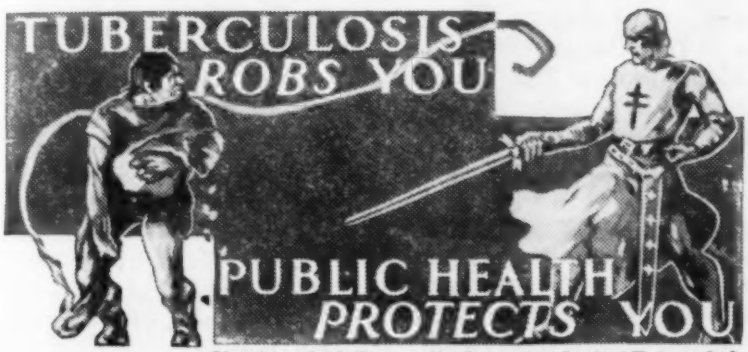
Lily A. Craighan, R.N., P.H.N., Dept. of Public Health, San Francisco, Calif., Supervisor of Health Education

Public Health Nursing Section

Theresa M. Gartner, R.N., Box 252, Tucumcari, N. Mex., School Nurse

Mattie M. Washburn, 325 State St., Albany, N. Y., Assistant Director, Div. of Public Health Nursing, State Dept. of Health

PUBLIC HEALTH ADMINISTRATION



Christmas Seals Finance the Campaign Against Tuberculosis

HEALTH RECOVERY CAMPAIGN

EVERY health officer should participate during 1934 in what has come to be known as the Early Diagnosis Campaign, sponsored by tuberculosis associations. The slogan selected, the art design, the printed matter, and newspaper cartoons are all designed to create popular understanding and support of public health activities. Tuberculosis workers are being urged by their leaders to broaden the scope of their health education efforts and to invite all health workers, official and nonofficial, to join with them for the sole purpose of promoting public health.

The slogan: "Tuberculosis Robs You—Public Health Protects You" has been selected for general use by tuberculosis associations throughout the country, but it is not essential that this slogan be used exclusively—it may be adapted to express the immediate health problem. A manual of suggestions has been prepared for the use of organizers of committees, which emphasizes the importance of making the movement one of the public health group as a whole, subordinating tuberculosis control to whatever relative place in the program it may take by common consent of the members of the committee.

The objects of the campaign have been thus set forth in the preliminary material placed at the disposal of local tuberculosis associations and committees, which is also available through them to other organizations:

1. To increase the general public's appreciation of the benefits it derives from good public health services, with emphasis on the official health department's work, and its needs.

2. To cause the public to demand adequate public health service.

3. To coördinate with the health department the efforts of all voluntary health agencies, as well as civic organi-

zations, clubs, and outstanding individuals to the above ends.

There are to be two posters, one 24-sheet, and the other car card size, the latter supplied printed on cardboard and on paper. The design shows a robber about to escape with his spoils when he is interrupted by a heroic figure with a flaming sword. The caption is "Tuberculosis *Robs* You—Public Health *Protects* You."

Three pieces of printed matter will be provided for use in the campaign.

"Tuberculosis *Robs* You — Public Health *Protects* You," a 4-page circular for wide distribution among the public as a whole at meetings, through interested groups, as enclosures in letters. It tells, briefly, the need for adequate public health protection in terms of what this means to the individual, especially with relation to tuberculosis.

"Mr. Taxpayer Goes Shopping" is intended to help obtain the coöperation of organizations, and should be used with persons in a position to influence the action of groups to participate in the campaign; leaders in community and civic life. It dramatizes the idea of the average man shopping for his government activities; almost forgetting public health, until he is shown how little it costs in comparison with how much it does for him. The reader is invited, at the end of the leaflet, to join the campaign.

"You Don't Say!" A series of statistical statements supporting the slogan of the campaign, for the information of community leaders, office holders, educators.

A set of 14 cartoons, a single column in width, has been prepared for use in newspapers, and other periodicals, 4 of which are shown in this article. They illustrate such statements as the following, which appear as part of the cuts which will be supplied ready-to-print:

> We spend thru taxes about 1 cent per week for health protection (the cost of only 2 cigarettes)

Public Health
FACTS
BUY YOUR WEEK'S SUPPLY
2 for 1¢
We spend thru taxes about 1 cent per week for health protection (the cost of only 2 cigarettes)

$2 per person a year will operate a fully efficient health department. Our cities now spend only 75¢ per person

Public Schools are a bargain at $16.17 per person
Public Health struggles along on 50¢ per capita

Fire protection taxes each person about $3.32 per year
Health protection about 50¢

For further information, consult state or local tuberculosis associations, or the National Tuberculosis Association, 450 Seventh Avenue, New York, N. Y.

Decoration for leaflet "Mr. Taxpayer Goes Shopping"

VITAL STATISTICS

Negroes Hard Hit by Tuberculosis—Nearly one-fourth of all deaths from tuberculosis in Illinois are among negroes and other colored races, although they make up less than one-twentieth of the population. Mortality from tuberculosis among negroes in Illinois is 6 times greater than among whites. The death rate from this disease among Illinois negroes is more than twice the death rate from tuberculosis among negroes in Arkansas, Florida, Georgia, Louisiana, Mississippi, or South Carolina, and much greater than in any of the other southern states. About 1 in each 6 deaths from all causes among Illinois negroes results from tuberculosis, whereas among white in this state that disease accounts for only 1 in each 25 deaths.

Furthermore, the progress toward eradicating tuberculosis in Illinois has been much less among negroes than among whites. During the last decade the death rate from tuberculosis among negroes in Illinois has declined only 19 per cent while that among whites has been reduced 45 per cent. Expressed in another way, the rate of decline has been more than twice as great among whites as among negroes in this state.

Only heart impairment causes more deaths than tuberculosis among negroes. Among whites, on the other hand, heart disease, cancer, nephritis, apoplexy, and pneumonia are all much more frequent causes of death than is tuberculosis. Whereas tuberculosis caused only 45 deaths per 100,000 population among whites in Illinois last year, it was responsible for no less than 260 per 100,000 among negroes.

These are facts that cannot be overlooked in the future program against tuberculosis. The more rigorous climate is perhaps a factor in causing a higher rate from tuberculosis among negroes in Illinois than in the South. Congestion of the negro population (about 240,000) in Chicago is probably another important factor.—*Illinois Health Messenger*, 5:94–95 (Dec. 15), 1933.

Mortality Data for Hong Kong in 1932—The Medical and Sanitary Report of Hong Kong for 1932 contains some interesting data concerning the mortality statistics of the Colony.

In 1932, the civilian population of the Colony had a crude death rate of 24.74 (per 1,000 population) from all causes—a slight increase over the corresponding rate (24.08) for the previous year. The Chinese population alone, which includes 98 per cent of the total population, had a general death rate of 25.02 in 1932 and one of 24.39 in 1931; the non-Chinese experienced a 1932 mortality of 14.16 (per 1,000 population)—a substantial increase over the rate of 11.83 for the previous year. Examination of the infant mortality data shows that the non-Chinese population lost 97.93 infants per 1,000 registered births in 1932, a rate 58 per cent higher than that (61.85) in 1931. It is difficult to calculate an infant death rate among the Chinese population since only a part of the births are reported—yet it is generally admitted to be abnormally high.

Analysis of the mortality by causes of death among the civilian population reveals broncho-pneumonia at the head of the list, rates of 323 and 361 (per 100,000 population) having been recorded for that disease in 1932 and 1931 respectively. Pulmonary tuberculosis was second with death rates of 252 and 260 in the same 2 years. Other leading

causes of death in 1932 were bronchitis with 112 deaths per 100,000 population; diarrhea (infantile)—160; diarrhea (over 1 year)—140; nephritis —89; and heart disease—66.—Tables from *Hong Kong Medical and Sanitary Report*, p. 26–30, 1932.

The **Threat of Violent Death to the Male**—Why is the mortality of males nearly everywhere higher than that of females? In the early months of life, when the relation of the infant to the external world is essentially the same for both sexes, the higher mortality of the male child can be due only to constitutional causes. That the male child is indeed somewhat more delicate than the female is indicated, among other things, by the fact that among stillbirths males exceed females by over 30 per cent. And even the principal communicable diseases of childhood, namely, measles, scarlet fever, and diphtheria, show a higher death rate among boys than among girls. But when childhood years are past, indications are that constitutional factors play a subordinate part in determining the excess mortality of the male over that of the female. Analysis of the various causes of death, as they affect the two sexes respectively, bears out this view. It is to the external factors that one must look for an explanation. Even in the very earliest years the boy is more venturesome than the girl, and throughout later boyhood, adolescence and his entire adult life, the male is subjected to external dangers not encountered in anything like the same degree by the female.

Analysis of the mortality statistics for the years 1929–1931 among white persons in the U. S. Registration States, as of 1920, clearly reveals this handicap of the male. During the preschool period, or, to be more exact, among children of ages 1 to 4, the death rate from accidents was 70.0 per 100,000 among boys, as against only 54.3 among girls. At these ages, however, deaths from violent causes form a large part of the total for either sex, taking almost as heavy a toll as measles, scarlet fever, and diphtheria combined, both among boys and among girls.

During the next 10 years of childhood, accidents and other forms of external violence produce a far greater number of deaths among boys than any other single cause. Over one-quarter of the deaths of boys at this age were due to accidents alone. In fact, more schoolboys die as a result of accidents than from all of the usual communicable diseases combined, including influenza-pneumonia and tuberculosis. The accident death rate of boys of this age is almost 2½ times that of girls, 52.7 per 100,000 as against 21.8.

The main working period of life, ranging from 15 to 49 years of age, represents the term of man's greatest exposure to the hazards of industry and of civil life. It is, therefore, not surprising to find that there are more deaths due to external violence among men than from any other cause; practically twice as many male deaths result from violence during these years as are caused by tuberculosis (all forms). The male death rate from violence at ages 15 to 49 exceeds that of females by more than 4 to 1 (142.1 against 33.2). This age period comprises the most productive years of a man's existence; the years during which his value to society is greatest. It is precisely at this time of life that the sudden loss of the head of the family is most disastrous. Great stress has been laid on the needlessly high maternal mortality rates in our country; but the question may well be raised whether the regrettably high maternal death rate is not far exceeded in serious consequences for society and the family by the high and largely avoidable death rate from violence of various sorts among male wage earners.

The combined mortality rate of men from accidents, homicides and suicides during this age period is just 3½ times that of women from causes related to pregnancy and childbirth. If the deaths both from violent causes and also from puerperal causes could be entirely eliminated during this period of life, the mortality of both sexes would not be far different, namely, 376.1 per 100,000 for men as compared with 342.0 for women.

After age 50, the rising tide of deaths from the chronic or degenerative diseases tends to obscure the importance of the violent causes. Nevertheless, the latter remain among the chief causes of mortality among men to the very end of the life span. In the 5-year age period 50–54, the male death rate from external violence is exceeded only by that from organic heart disease. Violence, at this age, is responsible for more than 4 times as many deaths among men as among women (220.6 per 100,000 as against 54.2).

During the next 10 years of life, 55–64, violent deaths among men are outnumbered only by those ascribed to heart disease and cancer. After 65, however, violence as a cause of death is outranked by several diseases, notably heart disease, cancer, cerebral hemorrhage, nephritis and pneumonia.

Although external violence ceases to be the chief cause of death among men after age 50, it neverthless continues to exact an increasing toll of deaths as old age approaches. Mortality rates from violence in the years 1929 to 1931 combined, among white persons, at the successive age periods were approximately as follows:

	Rates per 100,000	
Age Period	*Males*	*Females*
45–49	198	44
50–54	221	54
55–64	262	78
65–74	335	167
75 and over	615	692

It is interesting to observe that, as old age advances and the greater activity of the male gradually diminishes to the level of that of the female, the accident death rates for the two sexes more closely approach each other. In fact, it is observed that in extreme old age, accidents were even more frequently the cause of death among women than among men. At this stage of life, vigor ceases to be a factor in violent deaths; instead, the underlying causes are those associated with senescence.

The facts thus brought out by a study of the deaths from violent causes among males and females by individual age groups are also reflected in the average death rates for all ages, as follows:

During the 3-year period, 1929 to 1931, the average death rate from all causes among white males in the Death Registration States of 1920 was 1,094.1 per 100,000, as against 933.7 among white females. In other words, among every 100,000 white males there were 160 more deaths than occurred among an equal number of white females. At the same time the death rate per 100,000 from external causes among males was 148.6, while that of females was only 54.6. Thus, of the 160 extra deaths from all causes among white males, 94 or 59 per cent were attributable to external violence. The deaths from these causes were almost 3 times as many among men as among women.

Fortunately, this excess is capable of reduction by means actually within reach. The various factors in industry, in sport, and in personal habits, which create the special risk for the male, are subject to modification, if sufficient attention is drawn to them. Much has already been done in this direction by such organized efforts as the Safety First movement; but much more still remains to be done. When the full effect of such measures is rendered available, much wastage of human wealth will be prevented, and great gains will be

secured for the individual, for the family, and for the nation.—*Stat. Bull.*, Met. Life Ins. Co. 14:3–5 (Nov.), 1933.

Maternal and Infant Care in North Carolina—Since great stress has been laid on the subject in recent months, every reading citizen of the State of North Carolina should have become cognizant of the fact that both the maternal and infant mortality in the state are higher than the national average. The problems of maternal and infant mortality are so closely interrelated that one cannot be discussed without study of the other.

In North Carolina, puerperal causes accounted for 555 deaths and a death rate of 7.2 (per 1,000 live births) among mothers in 1932. In the same period, 5,459 babies died before the end of their first year of life—equal to an infant mortality of 70 (per 1,000 live births). Further analysis shows that 2,424 of the infants died before they were 13 days old; even more deplorable was the fact that 1,209 or more than 1 out of 5 died before they were 1 day old.

Opinions may differ, but all thinking citizens realize that the question is a rather involved one and that the blame cannot be placed on any one doorstep. A number of causes contribute to the high infant and maternal mortality. It is natural to assume that the first place for an investigation is the attendance and care which each expectant mother has received from the inception of her pregnancy to and including the safe delivery of a normal baby.

An examination of the statistics in North Carolina in 1932 shows that midwives delivered about 34 per cent of the women in childbirth for that year. It will be noted that 8,121 white women were attended exclusively by midwives. Of the 34 per cent attended by midwives, none had the benefit of any form of medical prenatal service except in the instances where upon the direct request of the midwives literature was supplied to them by the State Board of Health. No exact figures are available to prove that, of the remaining 66 per cent attended by physicians, about one-half had the services of the physicians only from the onset of labor; yet it is a safe estimate. This means that about two-thirds of the women in North Carolina go through their pregnancies without any form of direct personal medical prenatal service whatever. For several years, the State Board of Health has been doing its utmost to improve the services of midwives. Toward this end, 6 competent nurses were sent into 56 counties of the state in an effort to impart some instruction to each midwife carrying on her vocation. These nurses examined 1,108 midwives. The nurses found that following their summer's instruction, 224 had the fully equipped bag which the department recommends for midwives to carry; 403 had partially equipped bags; and 454 had no equipment whatever—not even a bar of soap or a pair of scissors.

In almost every one of the aforementioned counties, the county board of health readily agreed to adopt resolutions conferring authority on the State Board of Health and the official county physician to regulate the practice of midwifery for a period of 1 year.

It is the aim of the State Department of Health some day to achieve the now impossible ideal, which is competent medical service and competent prenatal service for every expectant mother in the state.—*North Carolina Health Bulletin*, 48:3–5 (Dec.), 1933.

PUBLIC HEALTH ENGINEERING

THE PRACTICAL APPLICATION OF MILK CONTROL*

J. R. JENNINGS

Chief, Division of Milk Control, City Health Department, Louisville, Ky.

MILK control is extremely young in a modern sense, having as its start the certified milk movement in 1892. It was not until 1907–1910 that states and municipalities considered it of much importance. Since that time, there have been developed three principal types or systems of milk control, namely; the "Scoring" system, the "Force" or "Thou Shalt" system, and the "Grading" system. All are intermingled with variations. I shall attempt here to give the merits of each in the light of my experience.

The scoring system came along about 1903 and was useful in educating the dairy industry and the consumer to the fact that milk needed protection from a sanitary standpoint. However, it was soon discovered that it was lacking in certain fundamentals, particularly in that it did not get results among a large part of the industry, and especially the inferior part. For example, A few producers and distributors, being of a higher type, regularly received a higher score than the remainder. The mediocre and the careless or ignorant ones then became negligent, discouraged, or disgruntled. The inspector was accused of favoring those with a high score and "picking on" those with a low score. When the inspector said to the dairyman: "Your barn floor is filthy today. You must get that in better condition," the dairyman replied: "Yes, I noticed you scored me down on that the last time, but I have been busy and I get just as much for my milk." This system does not get desirable results because of numerous similar situations both in pasteurization plants and on dairy farms. There is another important weakness in this system. Assume that the pasteurization plant does a poor job of sterilization or the raw distributor has a contaminated water supply, but all other things are complied with. Both are given a score of 97 per cent or 98 per cent—probably the highest scores in the city. Yet both are potentially dangerous. The public is consuming this milk with a false sense of security. These defects then led health authorities to the adoption of the force system.

This system, briefly stated, reads something as follows: "It shall be unlawful for any person, firm, or corporation to sell milk in the City of ....., unless all of the following items of sanitation are complied with." The items are then listed and are much the same as those appearing on the score card used with the scoring system. Theoretically, this type of control is ideal, but from a practical point, and in all but exceptional cases, it is probably the poorest.

As an illustration, the law or ordinance will require, along with many other items, that the milk plant or

* Read before the Public Health Engineering Section of the American Public Health Association at the Sixty-second Annual Meeting in Indianapolis, Ind., October 10, 1933.

milk house, as the case may be, shall be fly tight and contain no flies. The inspector makes a call and finds the milk bottles covered with flies and proceeds to give the plant foreman or dairyman a warning or perhaps a severe reprimand. On the following visit, the inspector may find things as bad or worse and serves notice that the establishment is "closed up." If the dairyman has influence politically, or if the bank he owes money to has influence, and it frequently has, he will likely be reinstated over the inspector's head.

He may take the matter to court, in which case the inspector may fail to prove that the milk in question has killed anyone or even made anyone sick. The judge or jury in most such cases, will then render a verdict "not guilty," due to the fact that the penalty is too great for the offense.

After having several such experiences, the inspector mumbles to himself, "What's the use?" He knows, and the dairy industry knows, that he is beaten, and he continues with nothing but the persuasion he is able to muster. He finds to his dismay, in many cases, that not only the courts, but the public, and even the law making body that passed the ordinance, will not support him in its enforcement.

If it were not for these things, the force system would succeed more frequently. He also learns that it is not fair and just that a milk distributor be closed up on many of the items specified by the law or ordinance. His own sense of fairness rebels against it. For these reasons the grading system of milk control has come into wide usage during the past 10 years.

The difficulties mentioned happen with much less frequency when the grading system is used, provided several grades are established. If only one grade is established, the program will be worse than the force system, because there is no penalty left except to close up the distributor. Since in most cases that is impossible, for the reasons given, the "Grade A" cap then appears on low grade milk. The items required in the grading program are much the same as those in the other two systems, but the lower grades are provided for enforcement purposes only. The inspector determines the grade and the housewife does the enforcement.

The distributor soon learns that he must keep a "Grade A" rating or he will lose his business. He would also much prefer a stiff fine in court than to have his competitors know that his grade has been lowered. We may all agree that only the best grade of milk should be sold. In my experience, the simplest, the most speedy, the surest way, and with by far the most harmony between health departments and the industry, to get a good milk supply, is by the use of the grading system. The public, the courts and law making bodies support a program of this type when it is known that the penalty is not the severe treatment of closing a legitimate business, but simply requires that the distributor label his milk according to the degree of safety surrounding its care. The inspector tells the distributor that he has no desire to stop him from selling milk nor to take him to court upon violation of the milk ordinance, but that he must label his milk "Grade C" or "Grade D." When the housewife sees the lower grade rating upon the milk bottle cap or the item in the newspapers, she advises the milkman that she is changing to a "Grade A" dairy.

When the milk grading program was begun in Louisville, conditions were much the same as those existing in most of our metropolitan areas where milk control is inadequate and ineffective. Barns were dark, dirty, and dingy; milk houses were either nonexistent or largely unsatisfactory; equipment was battered and broken and of improper type; and

sanitary methods were little better. Due to a spirit of coöperation engendered into the industry by a competent and tactful application of the grading system, results were accomplished in a period of 4 months that would have been impossible with the scoring or force system. Milking barns became properly constructed, well lighted, and clean. Adequate 2-room milk houses were constructed to accommodate properly the cleaning and storage of equipment, and the cooling and care of the milk. Laboratory facilities were enlarged, and frequent examinations of all milk supplies were made. Pasteurization plants were also put in order including the most modern equipment and methods and were required to handle nothing but graded milk.

This type of control works as well in a town of 1,000 people as it does in the metropolitan areas. It works in a municipality where the temperature is 115° F. in the summer and in another that is snowed under all winter. The only reason it will not work in any part of America is politics.

But no system will bring satisfactory results if enforcement is in the hands of incompetent or uninformed personnel. One of the greatest curses heaped upon milk control agencies is the political patronage thrust upon them. In addition to having a good background, education, and experience, no inspector should be employed who does not have good approach, tact, and ability to work with the dairy industry without causing unnecessary trouble. Wisely, Louisville milk inspectors have been employed impartially only after thorough written and oral examination.

The objective of both the health department and the industry should be the same—more and better milk. Every health department should let the industry know that when the milk is clean and safe, it will help in educating the public to the necessity for increased milk consumption. To this end our Health Department sponsored a big parade through the business section of the city; 3-minute-picture-trailers were run for a week in all picture shows; window displays were placed throughout the city; a milk pageant was attended by thousands of our citizens; bottle collars bearing a statement by the director of health about milk went out on all milk bottles; a moving picture, made locally, showing the care of milk from the farm to the doorstep was shown to numerous civic groups and schools; many radio talks were made by leading health workers and numberless other things done to acquaint the consumer with our milk supply.

Contrary to the opinion of some, this type of milk control is not more expensive than others. When results are considered, it is less expensive. Our program has been handled at a cost of less than 8 cents per capita annually in Louisville. Direct taxation bears no part of the expense of this service. It is borne by and with the approval of the milk distributors.

FOOD AND NUTRITION

Added Vitamins—Where the nature of a food does not admit of artificial color being used as an indication of high quality, the food is often advertised as being of specially high vitamin content. Instances abound where the name of the product or its description in advertisement implies the possession of high nutritive properties which have little or no foundation in fact.

These things are not quite in the same category as the ordinary commercial advertisement, which habitually exaggerates the value of its wares. They must be looked upon as likely to disturb the normal intake of special ingredients, and so bring dietetics or education propaganda into disrepute, making more difficult the dissemination of sound knowledge on nutrition.

There is a tendency at the present time for manufacturers to avail themselves of the publicity value of recent vitamin research by adding vitamins empirically to a variety of foods without due consideration of the results which may accrue from such haphazard practices. If a halt is not called to this indiscriminate dosing of foods with vitamins there is a possibility of a disturbance in the balance of nutrition which may have wide-reaching effects, and which it is not unreasonable to contemplate with some uneasiness.

Another aspect of the matter is the risk of hypervitaminosis. Although, if the diet is normal and contains a sufficiency of milk, the danger from hypervitaminosis in children would not appear to be great, there is evidence which suggests that, under certain conditions (especially when the diet is lacking in milk or when the calcium intake is high and the phosphorus intake low), the risk of hypervitaminosis has to be seriously considered. It is not impossible that such conditions might occur in children receiving a faulty diet poor in milk and consuming appreciable quantities of bread dosed with irradiated ergosterol.

There are many other foods which are frequently or consistently debased in quality as a result of competition between manufacturers. It is difficult to say in most cases whether this debasement in "quality" implies actual reduction in nutritive value, or whether the purchaser is prejudiced merely on esthetic grounds, or, because he is not getting precisely what he asks for, or expects to get.—Taken from The Chief Medical Officer's Report, *The Pharmaceutical Journal of Great Britain*, Sept. 23, 1933.

Pellagra—New Theory Concerning Etiology and Treatment—Although pellagra is commonly described as a deficiency disease in which vitamin G plays an important rôle, the exact etiology is unknown. At least one investigator urges caution in ascribing it to vitamin deficiency alone, and this is supported by the observations of several physicians. One of the clinical features of the disease is the pathological changes of a degenerative nature in the intestines which strongly suggests that the absence of a hormone or some unknown factor or factors are responsible.

The author believes that pellagra is probably not an infection, that there is positive evidence of dietary or food insufficiency and a possibility that the colon, ileum and jejunum generate a hormone or a factor essential to normal tissue metabolism.

In view of the degenerative changes

in the intestines, particularly the structural alterations of the colon and ileum, a hypofunctional intestine is suggested. This degenerative tendency is the result of an absence of an unknown factor which results in the absorption and utilization of the mucous membrane of the ileum, jejunum and colon in an effort to secure the metabolic factor. This metabolic principle is designated as X_1 and X_2 pellagra factors.

There exists in the animal gut in the mucosa, soluble, digestible protein-like material and an unrecognized soluble factor designated as "X_2 factor." Dehydrated hog ileum and jejunum were prepared by a manufacturing drug firm by removing the mucosa, by scraping and dehydrating at low temperature with subsequent extraction to remove the fat. The resultant whitish powder is easily mixed with water, milk, orange or tomato juice. It can also be extracted by salt solution (1:5), yielding a fairly thick yellow-red solution. This solution precipitates with alcohol and phenol, resulting in a fine white powder. This powder was used in the treatment of several cases of pellagra and marked improvement resulted in 9 out of 10 patients, particularly reduction of the buccal inflammation and lessening of pain and soreness. There was a cessation of diarrhea where present.

On the basis of these tests, this material appears of definite value and it can be cheaply prepared and easily administered. The author proposed to perfect an extract for intravenous use and to establish the identity of the X_2 factor.—Abstracted from a paper by Jack Clayton Norris which was delivered before the Food and Nutrition Section of the A.P.H.A. at Indianapolis, 1933.

Vitamin C in Citrus Juices—In view of the recent work practically confirming the identity of vitamin C with ascorbic acid as well as the relationship between the amount of ascorbic acid determined by titration with dichlorophenolindophenol and the antiscorbutic value of the material, a number of experiments were undertaken to determine the degree of natural variation in ascorbic acid content of citrus juices and its resistance to storage conditions. The authors conclude as follows:

1. The method of titration with dichlorophenolindophenol has been applied to the examination of a number of samples of lemon and orange juices, both freshly prepared and preserved in various conditions.

2. It has been found:

(a) The reducing power of fresh lemon juice is subject to considerable variation, the lowest samples examined having only 60 per cent of the reducing power of the highest.

(b) The reducing power of orange juice is more constant and rather higher than that of lemon juice.

(c) The reducing power of both juices does not diminish much in storage in the absence of preservatives, but the use of any preservative which is efficient in preventing fermentation is followed by the gradual diminution of the reducing power which totally disappears in, at most, a few weeks.

(d) The same result is brought about by strong acidification, pasteurization, or boiling.

3. It is concluded that in untreated juice the reducing factor is protected from atmospheric oxidation by the action of an enzyme, and that when this action is inhibited by any of the usual means the reducing power is rapidly lost.—

Alexander Hutcheon Bennett and David John Tarbert, *Biochem. J.* 27, 4:1294, 1933.

A Deficiency Disorder Induced in Suckling Young Rats Bred on a Purified Synthetic Diet with "Glaxo Casein" (Caseinogen) as Sole Source of Protein—In a previous abstract (*A.J.P.H.* 23:163, Feb., 1933), attention was called to the dietary factor designated "physin" obtained from mammalian liver and not identified with any of the known vitamins. In connection with this work the abnormal behavior of several litters led to

the present experiments to determine the reasons for variation.

Young rats separated at weaning from the stock diet from 4 to 5 weeks were placed on the synthetic basal ration which was fed *ad lib*. After 16 to 20 weeks the animals were mated and during gestation and lactation only synthetic diets were used.

The original diet was modified by substituting "Glaxo casein" (caseinogen) for "light white casein B.D.H." (sodium caseinate). All diets included cod liver oil. On the sodium caseinate diet, while failure of lactation is common, in no case when the mother started to feed the offspring was there failure to rear them successfully, and the young showed good growth rate.

The rats on the caseinogen diet showed the same failure of lactation in many cases. However, the mothers which did start to feed the young were successful in only a small percentage in rearing. The offspring were much undersized in weight compared to the caseinate diet. Definite pathological symptoms were evident on the 24th day.

Added supplements either to the basal diet or directly to the young offspring were of curative value. Substituting sodium caseinate for caseinogen resulted in complete recovery while the controls died. Extracting the light white casein (caseinogen) with acetone failed to remove all of the factor, but the extracted substance was markedly less effective. Administering the acetone extract resulted in two cases of recovery compared to death of the control animals. Good results were also obtained by feeding a physin extract, resulting in rapid recovery, gain in weight and disappearance of pathological symptoms compared to death in controls not receiving this substance.

No variations in the results of these experiments were noted, either when manganese was added to the diet or when sufficiency of vitamin E was assured. The author discusses the possibility of the identity of physin with the so-called Coward factor. Further studies are to be pursued to eliminate definitely the possibility of protein deficiency or of some toxic substance in the protein.—L. W. Mapson, *Biochem. J.* 27, 4:1061, 1933.

CHILD HYGIENE

INFANT MORTALITY DUE TO RESPIRATORY DISEASES

HAVING noted that infantile mortality due to diseases of the respiratory system, and especially to influenzal broncho-pneumonia, is high, while that caused by digestive troubles is gradually being lowered, the rapporteur considers in particular the banal and influenzal infections of the upper air passages among babies, since efficacious prophylaxis of these diseases is of the utmost importance if we are to reduce mortality from broncho-pneumonia. After recalling briefly the principal clinical signs of catarrhal affections of the upper air passages and of the pharynx—which it is usual to call influenzal affections—and particularly their contagious and epidemic character, he proposes the consideration from the point of view of prophylaxis, of the ensemble of these infections whose etiology, in spite of much research, still remains obscure. He reviews shortly bacteriological research into the common influenzal forms and into pandemic influenza, noting specially the pneumococcus, the streptococci, Pfeiffer's bacillus, the filterable viruses, the *B. pneumosintes*, and the filterable forms of Pfeiffer's bacillus.

Professor Frontali admits the collaboration of diverse microbic species in the different influenzal manifestations. But it is probable that there is some other agent, not yet accurately identified, which plays a fundamental part in lowering the resistance of the respiratory system to the other germs which form its customary flora. It is not possible, however, to exclude the possibility of certain affections of the upper air passages being due primarily to germs existing in the customary flora. From epidemiological data it may be deduced that this agent is transmitted from the sick to the healthy, from mucosa to mucosa, by atomization of the saliva. The agent makes little resistance to exterior destructive influences. However, instrumental transmission may be admitted to occur from objects freshly soiled. There is no transmission by an unaffected third person; no " carrier " has been discovered. As soon as convalescence sets in, the patient is not contagious.

In connection with the etiological problem Professor Frontali touches on the problem of immunization which has been studied with a view to confirming the data of etiological research (agglutination, fixation of complement, using as antigen the bacillus of Pfeiffer). These latter reactions appear positive during illness and convalescence in adults and children of more than 6 years, more frequently than in children of from 1 to 5 years. Systematic research with regard to other germs, at regular intervals after convalescence, is to be encouraged.

In influenzal affections, one observes, generally, a cyclic evolution which makes one think of a possible important reaction making for immunization. But from the clinical point of view it is impossible to admit the existence, in influenzal affections among little children, either of permanent immunity or of immunity for any length of time. Influenza may repeat in a baby treated in hospital at intervals of from 2 to 5 weeks. From the clinical standpoint we must look upon immunity-resistance following an attack of influenza as ex-

tremely problematic, and in any case as being of short duration.

The rapporteur then notes the *tendency* of the mucosa of the upper air passages when attacked by a virus to give rise to an infection. The antibacterial and vibratile defenses of the pituitary mucosa may be modified, directly or indirectly, by many influences, such as chill, over heating, the super-dry air of centrally heated rooms in winter, the inhalation of irritating dust or vapor, and so offer diminished resistance to the customary flora or to the specific agent of influenza. The same influences may cause a congestion favorable to bacterial invasion of the mucosa or of the sub-mucosa—cavernous tissue rich in blood.

Climatic conditions, by acting on the local and general resistance of the organism, and probably also on the biological conditions (virulence) of the microbes in question, play a highly important part in the frequence of influenzal attacks during the different months of the year. (Here follow certain statistical and climatological data.)

Susceptibility to influenzal affections varies with age. The generally admitted low frequency of these affections in the newly-born, and during the first 2 or 3 years of life, may be explained by the anatomic conditions of the mucosa and by the *eutrophia* assured by breast-feeding usual at this time. The importance of the passage of antibodies from the mother to the fetus through the placenta, or to the baby by the mother's milk must not be exaggerated, when we reflect on the relatively short duration (weeks or months only) of the immunity that the greater number of influenzal affections assure even to adults. With the exception of this early period, influenzal affections occur more often, as is shown by statistics, in the first and second year than in the following years of childhood.

The alimentary factor has considerable influence on the predisposition to influenzal affections in early childhood, on the frequency of such affections, and especially on their gravity and prognosis. These infections, statistics show, are less frequent, and in particular less serious, in the well-nourished breast-fed baby than in the normal artificially fed baby, while they are a grave danger for the bottle-fed baby that suffers from nutrition troubles.

Professor Frontali does not hesitate to affirm that a well considered system of artificial feeding rich in fats (particularly, in his oleofarinaceous food) assures better resistance than that obtained by preparations poor in fats and rich in carbohydrates.

Shortage of the liposoluble A (anti-xerophthalmic) leads to anatomical changes in the mucosa of the conjunctiva and the upper air passages with a patent reduction of resistance to various infections. The exhibition of factor B (anti-beriberic) exercises a well known influence on the whole metabolism of growing organisms, but particularly, according to Professor Frontali's personal experience, on the metabolism of fats by increasing their tolerability.

The latent and effaced forms of the lack of factor C (antiscorbutic) are accompanied by a distinctive dysergy to infections of the upper air passages. The tests (capillary fragility, capillaroscopic appearances) proposed by Professor Frontali show that the latent and effaced forms of infantile scurvy are not infrequent among artificially fed children.

Rickets, considered by many to be a D avitaminosis, is accompanied by an admitted predisposition to infections of the air passages, linked in part to deformations of the thorax and to changes in the respiratory mechanism. These infections in turn aggravate the conditions of avitaminosis in general, and in particular those that make for rickets.

In the pathology of early childhood avitaminoses and infections of the air passages form a vicious circle, accounting for the frequent coincidence of rhinopharyngitis, bronchitis, and bronchopneumonia with rickets, scurvy (manifest, effaced or latent) and xerophthalmia.

From the acquired predisposing factors just considered, Professor Frontali passes to the strictly individual and family constitutional factors (exudative diathesis of Czerny, angioneuroses, endotheliapathy—studied by the rapporteur in its capillary manifestations—adenoids, allergy), which may explain certain chronic infections, with frequent recurrence of acute crises and specific manifestations without apparent reinfection by other sufferers.

These considerations concerning exudative, lymphatic and adenoid subjects hold good for subjects in whom to the congenital constitution is superadded a tubercular infection, that is to say, scrofulous subjects. Certain morbid conditions, such as convalescence following on debilitating illnesses not caused by nutritional trouble, also exert a considerable predisposing influence.

In general, the frequency and importance of upper air passage infections are, for the practitioner, a *test* of the general resistance of the child, as they are also in the case of the aged.

Starting from the foregoing observations, Professor Frontali makes the following suggestions for the prophylaxis of these diseases, suggestions aiming at (*a*) avoidance of contagion, and (*b*) opposition of the most vigorous resistance by the infantile organism to inevitable infection.

(*a*) Mechanical protection of the child at the point of origin of the infection, as soon as the first stages of the disease are recognized. The fountainhead of the infection may be the mother or the nurse. The question of continuing breast-feeding by the mother or nurse suffering from influenza is settled in the affirmative, due precautions being taken—contact limited to the feeding time, previous washing of the breast, use of a gauze mask. This case is, theoretically, the only one in which an adult suffering from coryza or influenza should come near an infant; but in practice it is not easy to dispense from the care of a child, healthy or sick, whether in institution or hospital, in the family circle or at school, everybody suffering from even the mildest form of rhino-pharyngitis which may give rise to influenzal infection.

However, parents, informed of the danger, can attempt to segregate the healthy child from the persons affected; they ought to know the usefulness of the gauze mask and the method of employing it. The education of teachers and of the staffs of children's institutions (especially those for babies) should lead to the adult sufferer himself, at the very outset, declaring the disease, even when it is slight (care being taken to prevent the sufferer from keeping silence through fear of consequences, such as dismissal for reasons of delicate health). Decisions taken by the director of an institution will vary with the case (for cases of afebrile coryzas in homes, creches, hospitals), the use of the gauze mask; for feverish influenzal cases, cessation of service until complete cure.

In hospitals and other institutions for children, transmission from the sick child to his neighbors in adjacent cots can only be avoided by the individualization of personal effects, and by a certain distance being maintained between cots (about 4½ feet). Impermeable and transparent partitions of glass or even cellophane, about 8 feet high, are necessary. The system of individual open boxes is indispensable in every institution that receives children under 2 years.

(*b*) Habituation to climatic conditions: For all normal children, and more particularly for children constitutionally vasolabile, exudative, and disposed to colds, life in the open air provides excellent exercise of the mechanism charged with adapting the organism to weather variations. This treatment is to be completed by hydrotherapy, massage, active and passive movements and gymnastics from early childhood.

Climatological study, not only physical but biological and medical, of the atmospheric conditions that favor influenzal affections, is greatly to be desired. Such a study would permit us to recognize more exactly the conditions that contraindicate the going-out of children (damp cold, etc.). In this connection Professor Frontali suggests the creation of special observatories, to be attached to university pediatric clinics, and staffed by climatologists who would have a certain interest in working with pediatricians. Study of harmful conditions prevailing in closed rooms will lead to their bettering, by regulating the renewing of the air, the heating, the degree of humidity, and in the countries where it is necessary the cooling of the air.

Feeding—Breast feeding during the first year guarantees resistance to influenzal affections and their more important complications. After weaning the nutrition problem must be solved by the pediatrician and the family doctor, due regard being paid to the influence of proper feeding on the general power of resistance of the child (importance of alimentary fats rightly used, of the liposolubles A and D, and of the antiscorbutic and anti-beriberic factors in avoiding all possibility of dysergy by avitaminosis).

To be well nourished is one of the fundamental conditions necessary for reducing influenzal attacks to a minimum. One must try to maintain this condition as far as possible by a balanced, complete diet, even during illness of long duration.

Vaccino-prophylaxis — This question is at the point where a solution must be sought in connection with a solution of the etiological problem or problems. Polyvaccines (B. de Pfeiffer, pneumococcus, diplococcus catarrhalis, streptococcus) have been tried, by the rapporteur among others, with encouraging results.

Medicamental prophylaxis—(1) General—Salicylates, aspirine, pyramidon, quinine have not given, in regard to frequency of attacks or to complications, sufficiently convincing results; while treatment by iodine, arsenic, cod liver oil and sea air, in the case of exudativo-lymphatic and scrofulous subjects, are of patent utility since they help to diminish the predisposition to catarrhal affections.

(2) Local—It would be impossible to draw up a list of the topical remedies which have been proposed (nasal instillations, pharyngeal pulverizations, etc.), with a view to disinfecting, cleansing, washing, and rendering more resistant predisposed mucosa. Where such remedies have been used to prevent the diffusion of infection in a collectivity of children, the results have not been heartening. Inhalation of iodine salts is certainly indicated in lymphatic subjects predisposed to catarrh, more particularly in the second period of childhood.

General and local prophylaxis by medicaments find their use in the treatment of lymphatic and scrofulous subjects rather than in the general fight against influenzal affections of early childhood. — Prof. G. Frontali — La profilassi individuale e collettiva verso le effezioni influenzali della prima infanzia. Association Internationale de Pédiatrie Préventive (Section Médicale de l'Union Internationale de Secours aux Enfants), Troisième Conférence, Luxembourg, les 27 et 28 septembre 1933.

PUBLIC HEALTH NURSING*

The First C.W.S.A. Nursing Project in Indiana—As soon as it was announced that women would have a chance at C.W.S.A. jobs, the wideawake superintendent of schools in one of our populous counties in which there had never been a county public health nursing service sent in a project calling for 8 nurses to do school health work.

In the meantime the State Commission on Unemployment Relief responsible for the Indiana Civil Works Administration, having already received many inquiries about the employment of nurses, chiefly for public health, appointed a committee to approve nursing projects and nurses' applications for them. The executive secretary of the State Tuberculosis Association was made chairman; other members of the committee were the executive secretary of the State Nurses' Association and the Director of the State Bureau of Public Health Nursing.

The newly formed committee met at once with the newly appointed director of women's work in the State House and approved the above project calling for 8 nurses. A form of application was drawn up by the chairman of the nursing committee, which decided that a nurse was not eligible for a C.W.S.A. position unless she was registered in Indiana or had a permit to practice nursing here pending registration. The committee was also firm in the principle that every nursing service developed should have competent nurse supervision.

With these principles in mind the assistant director of the State Bureau for Public Health Nursing visited the county asking for the 8 nurses, to see that the plan was carried out. A competent local public health nurse was found whose economic status enabled her to be approved by the local social worker representing the State Civil Works Administration. The local registrar of the Nurses' Directory checked up on the professional qualifications of the nurse applicants with assistance from the office of the State Nurses' Association.

Within a few hours after the state had wired the county superintendent of schools who sponsored the project (which had been approved by the local County C. W. S. Administrator), 7 of the 8 nurses were on hand with their supervisor and were holding a 2-day institute to initiate them into school health work. The details of instruction for the institute had been worked out with the supervisor of nurses by the nurse from the State Bureau of Public Health Nursing, who on the day before had accompanied the supervisor and the superintendent of schools to a meeting with the officers of the local county medical society who already constituted the Medical Advisory Committee for the local Public Health Nursing Association. She was supplied with standing orders for school nurses, worked out by one of our prominent school physicians, the *Manual of Public Health Nursing* (2nd ed.) and the American Red Cross *Rural School Nursing*. Rules and regulations for the school nurses were worked out by the medical advisory committee with aforementioned standing orders to guide them.

Ways and means of equipping the

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 6 State House Annex, Indianapolis, Ind.

school nurses were worked out. It was decided that white uniforms were expensive to launder and were not suitable for public health nursing. The staff decided they would wear the regulation blue public health nurse's uniform. They bought a bolt of cloth together, and uniforms were made by members of their families or the nurses themselves. Each nurse furnished a bag of some kind and made a washable lining to hold the few bottles necessary for soap, alcohol, etc.

The following week a project was filed for two additional nurses for this county to work under the same nurse supervisor. It was approved. On December 12 the nursing supervisor wrote to the assistant director: "Our nurses went out to the schools this morning, uniforms, bags, and all. The getting ready has been real interesting and not so terribly hard, thanks to you for the splendid outlines and notations."

The following week the secretary of the State Medical Association called up saying the secretary of the Vigo County Medical Society had sent in a copy of the rules and regulations the local medical advisory committee (of which he was a member) had drawn up for the new rural public health nurses. After a conference with the Bureau of Public Health Nursing Staff, the State Secretary decided to mimeograph them and with a letter send them out to each county medical society secretary in the state.

Since so many counties were asking for public health nurses, who necessarily were unqualified for public health work and since the State C.W.S.A. Nursing Project Committee decided there should be competent nurse supervision for all nursing projects, the State Bureau of Public Health Nursing had a project approved to add 3 advisory nurses to its staff. They are all qualified public health nurses who have had county nursing experience. Each is assigned a district of the state; each drives her own car and pays her own expenses. So far they have been gratefully received by the new nurses, their sponsors. the secretaries of the local medical societies, and the local health officers.

To date, 111 nurses have been employed in hospitals and in public health work on C.W.S.A. projects in Indiana. More are constantly being assigned as new projects come up.

Public health nurses are in demand for immunization work sponsored by the state and local medical societies and for a sanitation campaign being put on in southern Indiana. There is getting to be a scarcity of local nurses to man the nursing projects. E. F. M.

Red Cross Nurse Receives Florence Nightingale Medal—A Florence Nightingale medal, accompanied with a citation on vellum, has again been awarded to a member of the national staff of the American Red Cross, this time to Charlotte M. Heilman, R.N., assistant national director of the Red Cross public health nursing service. The award is made annually by the International Committee of the Red Cross at Geneva to graduate nurses who have won special distinction in the care of the sick and wounded in war or disaster.

It was at the meeting of the International Red Cross in London in 1907 that the idea of honoring the founder of modern nursing with a commemorative medal was first proposed. Miss Nightingale, who was then alive, was pleased to assent, and at the following International conference, held in Washington, D. C., in 1912, the plan was unanimously adopted. Although proposed by the Hungarian delegates, it was the American delegates who caused the award to be restricted to graduate nurses. At that time nursing schools were rare in Continental Europe although not in England, and were un-

known in Central Europe. Provision was then made for 6 medals to be given to nurses of outstanding achievements, the number to be increased to 12 in the event of war. However, before any awards could be made the Great War occurred.

Mrs. Heilman's services attracted international attention during the war and after. Born and educated in West Virginia, she graduated from the Johns Hopkins training school in 1908, and accepted a place in the Trudeau Sanatorium, and later became educational secretary for the Tuberculosis League of Pittsburgh. She then married an engineer whose work took them to South America. When widowed, she returned to nursing and social work at Bound Brook, N. J. When the United States entered the war in 1917, she was assigned to the American Red Cross Commission in Italy, where she served both at the front and in the hospitals in Sicily and the island of Chioggia. After the armistice she engaged in tuberculosis work in Italy, and in 1920 was transferred to Serbia for child welfare work for several months, and then to Greece with its great refugee problem. In coöperation with the Patriotic League of Greece she organized child welfare work and served as director of nursing in the American Red Cross relief of refugees that followed the burning of Smyrna. She also assisted in forming the National Society of Nurses in Greece. In recognition of her work, she was decorated by the king in public ceremonies at Athens. Her European service ended in July, 1923.

Returning to the United States, Mrs. Heilman continued with the Red Cross. Her first assignment was to Santa Domingo, where she developed an excellent program in home hygiene for the native women. In 1925, she was assigned as nursing field representative for Florida and Georgia and gave service in the great Florida hurricane of 1926. After periods of similar service in the states of New York and Kentucky, she was transferred to the Red Cross headquarters in Washington, D. C., as assistant director of public health nursing.

When the International Red Cross Committee met last April, the greatest National Red Cross Societies put forward 35 nurses as candidates for the medal. When the credentials of all were examined an award of 28 medals was made. The American medal went to Mrs. Heilman in recognition of her work in the war and post-war periods in Europe and in disasters in the United States.

Twelve nurses connected with the American Red Cross had previously been honored with this medal. However, Mrs. Heilman was the first to receive the medal in the presence of members of the Central Committee, or central governing body of the society. This was done on December 13 at the National Red Cross headquarters in Washington.

The other Red Cross nurses to wear the Nightingale medal are: Miss Clara D. Noyes, national director of the American Red Cross nursing service, Elizabeth Gordon Fox, formerly director of the Red Cross public health nursing service, but now head of the visiting nurses of New Haven, Conn., Alma E. Foerster, Florence M. Johnson, Martha M. Russell, Helen Scott Hay, Mary E. Gladiom, Linda K. Meirs, Carrie Hall, Julia C. Stimson, Lucy Minnegerode, and Alice Fitzgerald.—Release from American Red Cross, Washington, D. C., Dec. 5, 1933.

EDUCATION AND PUBLICITY*

I HEREBY PROMISE

I hereby promise that during 1934 when I learn about a good piece of work in public health education, or see a sample of good public health education material, that I will send a postal card or brief letter of appreciation to the responsible health worker or health agency.

I promise, also, that I will write to the editor when a magazine or newspaper publishes a good article on public health.

Two Dead—One Missing—A publication widely circulated among high school teachers lists 9 sources for securing information about exhibits and other materials. Two have been out of print 2 years or longer. Mail to another comes back marked "Not here." The more one uses published lists of sources the greater the conviction that the interests of users of lists can be guarded only through confirmation of all sources except possibly references to standard texts. A copy of the full reference sent by mail would result in any needed correction of the address as well as other changes.

Judging from out-of-date references noted in recently published lists it is not safe to assume that a pamphlet published a year or two ago is now in print.

How Much Do They Know?—"P.P.J.," speaking editorially in *Journal of the Outdoor Life:*

"There is abundant evidence that the process of education carried on through" many mediums "has had results."

And yet the average man, even one who is recognized as being well educated, when asked to tell what he knows about tuberculosis, will give an astonishingly ignorant answer. There still remains a woeful lack of knowledge concerning these matters, and this seems to us, who work in the tuberculosis field, to be most discouraging.

If, however, as all agree, knowledge gives a person the ability to make choices, how can we hope in such a vital matter as the early diagnosis of tuberculosis to get people to go to their doctors until they know the basic facts about the disease? Many people can be found who, as a result of radio and other advertising, believe implicity in some brand of tooth paste, some food or drug designed to produce beauty and health for a mere dollar bill; but few of these people realize that every case of tuberculosis comes from another, and that there are certain well known danger signs that indicate the presence and activity of the disease.

"P.P.J." does not attempt to tell what to do about it. The answer seems to rest upon the doing of more and better educational work among both children and adults.

How Difficult Is Truth—Several years back, weeks of study and conference were needed to produce statements for an anti-diphtheria poster—statements that would be scientifically true, and at the same time clear and convincing to the parent.

Recently one of our health departments published the following:

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

A case receiving sufficient serum on the first day of illness invariably recovers.

Submitting this paragraph to our own Court of Final Resort we received the following:

The judgment of experts is that this statement is unwarranted. The best that can be said is that less than 1 per cent will die of diphtheria.

Who is right? Or, who is sufficiently right to be safe in making public statements?

Why Not Make Your Own?—Why not make and use lantern slides more freely? In staff conferences and board meetings, as well as in gatherings of supporters and of the general public, slides, even a single slide, may make a point or register a fact. And do it more quickly and more vividly than many words expressed by a speaker.

Agencies working with the schools may wish to supply slides for classroom use, or pass on information to the teachers about making their own slides. The making of slides as a classroom project is one of the newer developments in visual instruction.

Practical information for teacher or health worker is given in "Making Lantern Slides: With a Camera—Without a Camera," a 7-page memorandum issued by Social Work Publicity Council, 130 East 22d St., New York, N. Y. *6 cents.*

The headings include:

Why use of slides is questioned; where slides may be used; by welfare and health agencies; in schools; coöperation with school visual education leaders; helps in making slides, including how to get simple information on use of pencils, pens, paper cut-outs, cellophane, and how to make them at no cost at all; film slides or film strips; still films; reducing weight of slides.

Advertising in the School Room?—What types of materials are acceptable and what are unacceptable as the contribution of commercial firms who supply helps for classroom use in teaching health?

Many and fervid are the objections voiced against much of the advertising served with radio entertainment. But apparently few parents or teachers seem to question the extensive introduction of advertising into the classroom. And much of what is supposed to serve health education is predominantly the advertising of specific products.

Is education to be less carefully scrutinized than entertainment?

A State-Wide Program—One of the good pieces of work in developing well directed coöperation from lay organizations is that done by Mrs. Marie Kirwan, Committee on Tuberculosis and Health, S.C.A.A., 105 E. 22d St., New York, N. Y. The latest step is the formulation of "Suggestions as to a Health Program," issued by the New York State Federation of Home Bureaus. The material appears under: aims; county health department; prevention of communicable diseases; maternal and infant hygiene; yearly health examinations; and sources of further information.

The "Suggestions" may be secured from Mrs. Edward Eddy, College of Home Economics, Ithaca, N. Y. *10 cents.*

The Latest Book on Publicity—"How to Do Publicity," by Raymond O. Mayer, contains helpful information, although it is written largely from the standpoint of national distribution of publicity. The chapter on "The County Weekly and Publicity" will help state and county workers. Its chief value to public health workers is the picture it gives of the varied forms and mediums for spreading information. The book cannot meet the promise of the jacket: "It will be valuable in solving *every* kind of publicity prob-

lem." But Harper and Brother, New York, N. Y., will be glad to send a copy for examination. 272 pages. *$3.00.*

Complications for Readers — A state health association mentions two publications of the U. S. Office of Education at 5 cents each. The address for ordering one of them is given as U. S. Office of Education, Washington, D. C.; address for the other, Superintendent of Documents, Washington. This means writing two letters, yet both should be ordered from the Superintendent of Documents. In a second bulletin from the same source one address reads: Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. This is needlessly long. The "Government Printing Office" does print the publications, but the "Superintendent of Documents" is the selling agent for nearly all United States Government publications.

The Practice of Preventive Medicine—*The Health Examiner* is a miniature magazine, "devoted to individual preventive medicine," published by New York Academy of Medicine, 2 East 103d St., New York, N. Y. It should be a form of service by health workers to physicians to bring this journal to their attention. *10 cents* an issue. *Sample copies free.*

The Dec., 1933, issue is devoted to "The Practice of Preventive Medicine by the Private Practitioner," by Iago Galdston, M.D. This is source material of value to those who write or speak on preventive practice. *Especially important are the observations on the true values of the health examination.* A foreword states that the article

> . . . appeals wisely to the profession to educate the public to look upon his medical adviser as a steady mentor for every member of the family and not merely as a consultant in the emergencies of disease.

A Diet Teaching Device—"Food models in natural size and color," now available, are printed in three colors on tough cardboard, each model carrying on the back an analysis of the food values represented. The collection of 123 models supplies material for illustrating normal and abnormal diets. Duplicates are provided of such foods as milk and butter which the instructor may wish to repeat when displaying a group of meals at one time.

The reproductions are to be cut out, mounted in slots in small wooden blocks or otherwise, and displayed in any desired combination. *$3.00 a set;* less in quantity.

Two posters showing groups of fresh fruits and vegetables containing 5 per cent and 10 per cent carbohydrates, respectively, are offered for those interested in abnormal diets. *$1.00 each.*

An illustrated folder will be supplied by the Detroit Dairy and Food Council, 910 Stephenson Bldg., Detroit, Mich.

Hygeia, January, 1934—"The Advertising of Foods, Drugs and Cosmetics"; "The Job of Being a Parent"; "Give Your Doctor a Break"; "Courageous Fear—The Mother of Safety"; "Health Pursuits in Pictures"; "High Lights on Low Blood Pressure"; "Foot Comfort"; "Mysteries of Vision"; "Tooth Decay"; "Human Nature"; "Windows to the World of Hobbies"; "Sex Education: The Mating Period"; "When Science Came to Lost Creek"; "Healthgrams"; "Before Baby Is Two: Helping the Baby to Build Healthful Ways of Acting"; "Feminine Beautification" (Part 3); "Years of Progress in the Home"; "A Housewife Looks at the Committee on Foods: Breakfast Cereals"; "Training for Athletics and Health: Training for Track"; "The Gift a King Accepts" (a children's play); "I Want to Know: What Hap-

pens When You Breathe"; "New Books on Health"; "School and Health," including "A New Program for 1934"; "What Shall We Teach?" "Teachers and Mothers Work Together in Studying Health"; "The School Child's Day in the Home"; "Correlating Health Examinations With Class Teaching"; "A Bibliography for Solving Health Education Problems." *Hygeia,* American Medical Association, 535 N. Dearborn St., Chicago, Ill. *25 cents.* Sample *free.*

When as Well as Who—The hangover of 19th century ideas is a prime obstacle to 20th century health teaching. Ideas current no longer than a decade ago are not the least of our difficulties. Outmoded printed matter embalms outmoded ideas as to health and hygiene. Sales resulting from printed advertising issued years ago are reported in advertising journals.

There is no time limit to the selling life of an advertisement. Is it likely that all of our outmoded health education printed matter automatically fades away after a year or two?

And yet much of our health education printed matter carries no date—no warning signal even for the more intelligent and thoughtful. Should not all scientific matter in printed form be dated? And, therefore, all information or advice about health and hygiene? Need we list all of the reasons? Of course the date need not be conspicuous. It seems sufficient that it may be found readily and read easily.

Reprints from scientific journals and other periodicals sometimes give only volume and page numbers. The addition of dates is as an added service to the reader and student.

Education Concerning Obstetrics—*Journal* of Indiana State Medical Assn. (Dec., 1933) offers the following 11-point program:

1. Seventeen to 20 thousand women die annually in the United States of the childbearing process.
2. Educate the laity that one-third of these are due to sepsis; one-third to toxemia; and that nearly all sepsis deaths and nearly all toxemia deaths should be prevented.
3. This should not be used in the nature of a scare, but rather as statistical facts showing what good obstetrics can do.
4. Educate men to know the importance of the childbearing process.
5. Educate women to go to the doctor early in pregnancy. Educate them to select a doctor known to give good care in obstetric cases and to go regularly to see him.
6. Educate women as to what good obstetric care means.
7. Educate them as to diet, exercise, sleep, rest, and general prenatal care.
8. Educate them as to delivery care and what constitutes good care.
9. Educate them as to good after-care.
10. Educate them that all pregnant women need good care throughout pregnancy, labor, and puerperium.
11. Educate them that the best American stock is decreasing and that motherhood should be one of woman's greatest hopes, and if the mother is properly cared for during childbearing there should be little to fear.

The Healthmobile in Germany—From Dr. W. W. Peter comes this account of the healthmobile of the Deutsches Hygiene Museum of Dresden:

The crew consists of two men. One, an expert mechanic who drives and maintains the truck, the electric lighting plant, the slide and cinema projecting machines. The other is a man who has worked for some years in the Deutsches Hygiene Museum, is able to explain all of the exhibit which is not already self explanatory, gives the lectures prepared by or under the direction of Dr. Weisbach, and attends to the business side of the work. These two men can unload the exhibit, measure off the area, set up the tent, string the electric wiring with lights, erect the partitions, set up the shelves around the booths, place the exhibit, arrange the benches, build the platform, and have the whole place ready for the first visitors in the remarkably short time of 3½ hours. Then on the last day in a place, when the last visitors leave at 10 o'clock, by 1 the next morning everything has been taken down and packed inside or under tarpaulins on the roof ready for an early

start. These two men are healthy specimens, sun-tanned, always neatly dressed and with pleasing personalities. One of them is also an amateur photographer.

On entering the tent one passes the ticket table where admission fees or previously secured tickets are surrendered. By day the inside of the tent is lighted and ventilated by flap skylights which can be pulled down in rainy weather. The rear end of the truck houses the projection apparatus. The pictures are thrown in reverse from within the truck to the screen at the very end. The screen also is shielded by canvas so that daylight projection is made possible. At the tail end of the truck is the platform with a businesslike speakers' table.

In the middle of the tent are two rows of benches without backs. There are 10 benches in a row and each bench seats 5 persons if they are not too fat. Around the sides and rear are the booths housing 10 subjects visualized. Over each booth is a strong, shielded electric light. One hundred and sixty more people can stand in the aisles and in the booths and see the speaker when a meeting is under way. Some of the booths have shelves along three sides. These are made of the packing boxes which house exhibit material. The entire enclosed area measures 15 x 25 meters.

There are 10 subjects visualized and explained by captions:

1. Protection of Life and Health, in industry and transportation with instructions on First Aid.
2. Accident Prevention in Home and Land on the Farms. Has a section on flies and mosquitoes. There is a caption reading "Kill the Flies, or They Will Kill You."
3. Prevention of Traffic Accidents in Country and Town. Has also a section on fire prevention.
4. Venereal Diseases. This booth is in the corner behind curtains on which is a sign "For Adults Only." Have a health examination before marriage. Physical and mental consequences of syphilis. Plastic models.
5. Protection of Children Against Crippling.
6. Campaign Against Communicable Diseases. Plastic models. Charts.
7. Health and Work. Illustrations of how sickness interferes with working ability. Dust. Gases. Cleanliness.
8. Milk. Its proper preparation, handling, and use.
9 & 10. Protection Against Air raids.

On each of the several tent poles marking also the end of each partition there is suspended a 3' x 4' glass covered box for transilluminating pictures of the human body —the skeleton, the muscular system, the nervous system, and the circulatory system. There are also some beautiful anatomical preparations made by the Spaldeholz method showing various organs of the body—the heart, the lungs, bones, intestines, brain, etc.

The Healthmobile stays in a place for 1 to 3 days. The jumps are never too far apart. The towns are arranged on a schedule and the Burgomeisters notified. In so far as possible, Dr. Weisbach visits the officials beforehand and explains what this new thing is all about. He leaves the leaflets, What the Hygiene Auto Wants and Offers, as well as announcement posters and direction cards. The local officials do the rest. They find a suitable place, often in the market square. They notify the newspaper if there is one, the schools, and in other ways work up an interest in what is to come on a given date.

CAMPAIGNS

The liveliest of campaign bulletins (that we have seen) is *The Early Bird* ("catches the worm—and early diagnosis discovers 'The Bug'"), which happens to be the promotion bulletin for Early Diagnosis Campaign in New York State. Issued by State Charities Aid Assn., 105 East 22d St., New York, N. Y.; mimeographed, with simple but illustrative sketches.

"Diphtheria Immunization Campaign" outlines the plan for a statewide effort the first week of December, 1933, sponsored by the Indiana State Medical Assn., with the coöperation of numerous lay organizations. *Journal* of I.S.M.A., 1021 Hume-Mansur Bldg., Indianapolis, Ind. Dec., 1933. *50 cents.*

FOR REFERENCE AND EDUCATION

"Malaria," New York State Dept. of Health, Albany, N. Y. 2-page leaflet. Prevention, and if you have it.

"Organizing a Rural Preschool Conference." Reprint from *Public Health Nursing*. N.O.P.H.N., 450 7th Ave., New York, N. Y. 4 pages. *10 cents;* 3 for *25 cents.*

"A Study Program for School Nurses" is started in the Dec., 1933, issue of *Public Health Nursing*, 450

7th Ave., New York, N. Y. Reprints, *10 cents* for each month. The opening lesson takes up "The Nurse and the School Health Program."

"Suggestions for Reading in Public Health Nursing." Publications list of National Organization for Public Health Nursing, 450 7th Ave., New York, N. Y. 6 pages. *Free.* Classified as general, education, organization and community problems, records, supervision, tuberculosis, nursing, industrial nursing, mental hygiene, social hygiene, maternity and child health, school nursing and health education, nutrition, hourly appointment service, publicity helps and materials.

"What Builds Babies?" by Children's Bureau, Washington. Revised. Sold by Supt. of Documents, Washington, D. C. 8 pages. *5 cents.* Mother's diet.

"What Science Knows About Cancer," by E. C. Cutler, and "Progress Against Cancer," by Ludvig Hektoen. American Medical Assn., 535 N. Dearborn St., Chicago, Ill. Reprints from *Hygeia.* 10 and 8 pages. *10 cents each;* 5 or more copies, *8 cents* each.

The following from National Society for Prevention of Blindness, 450 7th Ave., New York, N. Y., are largely reprints from *Sight-Saving Review:*

"What Can an Organization for the Blind Do in Preventing Blindness?" 19 pages. *15 cents.*

"Lighting for the Conservation of Vision." 15 pages. *15 cents.*

"Non-Shatterable Glass in Spectacles." 2 pages. *5 cents.*

"Should Your Child Wear Glasses." From *Hygeia.* 4 pages. *5 cents.*

"Eyes and Athletics." Illustrated cover; limited text; for school athletes. 3 pages. *5 cents.*

"Pure Cow's Milk for Every Milk Use," by Evaporated Milk Assn., 203 N. Wabash Ave., Chicago. 4-page folder. *Free.* How e.m. may be used.

"The Pursuit of the Vitamins," by P. B. Mann. General Baking Co., 420 Lexington Ave., New York, N. Y. 16 pages. "What the vitamins do"; nutritional chart.

HEALTH EDUCATION

The following references appear in *Library Index,* National Health Council, 450 7th Ave., New York, N. Y.:

Friendly messengers carrying lessons of health, by M. P. Connally. *Red Cross Courier* (Washington, D. C.) 13:168–69, Dec., 1933.

Accomplishments under an emergency program, by Jennie MacMasters. *Trained Nurse and Hospital Review* (New York) 91:447–54, Nov., 1933.

Classes for prospective fathers, by E. V. Thiehoff, M.D. *Public Health Nursing* (New York) 25:648–49, Dec., 1933.

Health projects; plans for motivating health instruction. *Grade Teacher* (New York) 51:28, 62, Jan., 1934. The doll hospital, by U. B. Truitt; Our fruit project, by I. M. Lenhouts.

MAGAZINE ARTICLES

"An American Conference on Birth Control." *Literary Digest,* New York, N. Y. Dec. 16, 1933. Includes birth rate status, and summary of birth control objections.

"Immunity as the Chief Task of Future Medicine," by Dr. A. Hrdlicka. *Literary Digest,* New York, N. Y. Dec. 9, 1933. "Artificial immunization has already saved innumerable lives."

"The Lean Years," by Lillian D. Wald. *Atlantic Monthly.* Dec., 1933. Social and health aspects of depression as seen from Henry Street.

"Nutrition and Longer Life: the New Knowledge of Foods," by H. C. Sherman. *New York Times.* Dec. 10, 1933. "Diet which aids in fighting the deficiency diseases and improving the level of health."

"Some 'Facts' that Aren't So about Babies," by Dr. W. R. Ramsey. *Farmer's Wife,* St. Paul, Minn. Jan., 1934. "Explodes a few old-fashioned baby welfare notions."

BOOKS AND REPORTS

The Eugenic Predicament—*By S. J. Holmes. New York: Harcourt, Brace,* 1933. Price, $2.00.

This is an interesting and authoritative, though rather pessimistic, review of the situation. The author begins with some biological preliminaries and makes his case that our race carries a heavy burden of bad heredity. He is strong in his support of the eugenist, though recognizing that we find great diversity of opinion even in those who are firmly convinced of the fundamental necessity of work in this field. He is positive in his opinion, and correctly so, we believe, that to be well-born is to possess the greatest of all gifts, while for the ill-born there is nothing which can compensate for the lack of good heredity. He points out that we may swagger as much as we see fit about being masters of our fate and captains of our souls, but when we have drawn our allotment of genes, nothing can greatly further help us, though of course he does not decry education and training.

After laying a foundation, the book ends, as far as the text goes, with a chapter on "What Can We Do About It?" All plans for the improvement of the race come under two heads: (1) those under negative eugenics, whose aim is to eliminate bad heredity; and (2) those under positive eugenics, which is concerned with efforts to increase good heredity. This brings in the question of birth control, concerning which he holds it is quite evident that in spite of the great possibility it possesses as a means of racial improvement, it is a two-edged sword, and so far has been dysgenic. If we could breed from the best 25 per cent of our hereditary stock, in a few generations we would have a vastly superior society than one bred from the poorest 25 per cent.

He points out further a matter which he has elaborated in one of his former books, *The Trend of the Race,* that under our present social and economic régime there is a correlation between success in life and sterility which has tended to deteriorate the race. He believes that advance can come about only by interesting people in human biology and the development of a genuine and widespread desire for race betterment. At present the eugenic prospect is not hopeful.

An appendix of 34 pages gives many of the facts upon which the opinions are based. This includes a very interesting study of identical twins as regards diseases, mental inferiority, and superior ability. At the end of the book references for each chapter are given, and a good index makes easy reference. The book is well written and can be recommended to all interested in this subject, which perforce affects all of us. The printing and make-up are excellent. MAZŸCK P. RAVENEL

Oeuvres de Pasteur—*Pasteur Vallery-Radot. Paris: Masson et Cie. Tome VI,* xii+906 pp. 1933. Price, 160 fr.

This sixth volume of the collected works of Louis Pasteur, assembled under the able editorship of Pasteur Vallery-Radot, covers by far the most important period of this great scientist's life. It includes the subject of germ theories, of virulent communicable diseases, the virus-vaccines, and the prophylaxis of rabies. His previous

work led him along a natural path to the attack upon the causative organisms of communicable diseases.

His prevision of this route appears as early as 1859 in a manuscript note. Again in 1860 he predicts the falsity of the idea of the spontaneity of such diseases. In 1862 in a note to the Minister of Public Instruction he invites attention to the probability that the investigation of the diseases of plants and animals will lead ultimately to the solution of the infectious diseases of man. In 1863 in his memoir on putrefaction he refers to his hope that these studies may aid in the solution of those diseases which the physicians of the classic period called the putrid maladies; and a few months later he drew analogies between the diseases of wine and of man. After his solution of silkworm disease and of its mode of transmission from one generation to the next, he appealed to the Emperor for a suitable laboratory in which to carry on adequate experimental investigations on gangrene, on the viruses, and on inoculation.

At the end of 1867 he decided to turn to the domain of pathology and to devote himself to researches on the viruses, to experimental inoculations, and to the study of anthrax. In the meantime Pasteur had been elected to the Academy of Medicine and found himself actively engaged in ardent discussions of putrefaction and fermentation, in destroying the dogma of the spontaneity of disease, in convincing the physicians that spontaneous generation was in reality a chimera, and in controversies over surgical dressings.

It was not until April 30, 1877, twenty years after his first publication on fermentation, in which his method was elaborated, that he published his first memoir on infectious diseases.

From 1877 to 1885 Pasteur and his collaborators, Chamberland, Roux, and Thuillier, carried on, often coincidently and uninterruptedly, their researches in elaboration of his germ theory of disease and therapy based thereon. These contributions are segregated by subjects as follows: the applications of the germ theory to medicine and surgery; puerperal fever; furunculosis, and osteomyelitis; the etiology of anthrax and septicemia, and the relation of earthworms to anthrax; and virus vaccines, vaccines for fowl cholera, and for anthrax.

Pasteur's contributions to the subject of attenuation of viruses were summarized by him at the Congress at London in 1881 and at the one at Geneva in 1882. In one chapter are combined the memoirs on the vaccines of fowl cholera and anthrax, on the attenuation of and increase of virulence, notes on the results of vaccination against anthrax, the reply to Koch's criticisms, and his explanations of the miscarriages in anthrax vaccinations in Italy. The papers on variola, the plague, pleuropneumonia of cattle, the etiology and vaccine therapy for hog cholera, and his contributions on cholera, are assembled in separate chapters.

There also are found his communications on rabies to the Congress at Copenhagen in August, 1884, and to the Academy of Sciences at Paris on October 26, 1885, on the method of preventing rabies after the bite, as well as various notes of the results of antirabic prophylaxis.

In the last two hundred pages are included various "Documents" concerned with Pasteur's work, including those both of critics and defenders, which elucidate his ideas, and present his own part in the discussions as well as the comment aroused by the public presentation of his work. The hitherto unpublished reports of Pasteur on anthrax to the Conseil d'Hygiene are to be found here.

This volume thus contains all that

Pasteur published on infectious diseases in scientific and medical journals, and in the proceedings of scientific congresses. It closes the cycle of extraordinary activity from 1848 to 1886, in which he was led by an inflexible logic from molecular asymmetry to fermentations and thence to virulent diseases. It contains some of the greatest contributions to science and unquestionably records the greatest boon to humanity of the 19th century.

The meticulous care of the editor is exhibited not only in the accuracy of the reproduction of the original texts and their correction where this is required, but also, and especially in this volume, by the explanatory footnotes with careful citations of the pertinent references. The publishing house of Masson & Cie. has given to this and to the earlier volumes a format and a typography fitting the greatness of their contents. CHARLES A. KOFOID

Practical Food Inspection. (2 Vols.) **Vol. I. Meat Inspection. Vol. II. Fish, Poultry and Other Foods**—*By C. R. A. Martin. London: H. K. Lewis & Co., Inc.*, 1933. Vol. I, 312 pp. Price, $4.00. Vol. II, 250 pp. Price, $3.00.

Volume I is one of the best books for the inspector which it has been our fortune to run across. Beginning with Physiology and Comparative Anatomy, enough is given of these subjects for the ordinary non-professional inspector to understand as much as he needs of the anatomy of the body and its functions. Histories of slaughter houses and methods of slaughtering are given, followed by the inspection which is necessary. This takes up the usual routine of freshness or decomposition, discoloration, etc.; and then follows a list of the diseases, bacterial and parasitic, which are liable to be found. There are a glossary and a very good index. There is one colored plate giving illustrations of swine fever and swine erysipelas. The book is abundantly illustrated, and though the drawings are somewhat crude, they are descriptive and useful.

The second follows the general plan of the first volume, giving a short description of anatomy and physiology, and the differences between fish and air breathing vertebrates. This is followed by a description of the principal food fishes, each one of which is illustrated. The section on Poultry and Game follows the same general plan. Fruits and vegetables, including canned foods, are next considered. A section of 50 pages is devoted to Milk and Milk Products. This is very good, but not applicable to our custom here in America. Next come Miscellaneous Foods, Confections, Fermented Liquors, etc., and a short section of Food Poisoning; then a chapter of 35 pages on Legal Procedure. A glossary and index complete the volume.

While both these books are written from the English standpoint, they are practical and official, and though the English methods and legal procedures differ from ours, the books can be recommended for study to all sanitary inspectors and health officers.

MAZŸCK P. RAVENEL

American Red Cross Text-Book on Home Hygiene and Care of the Sick—*By Jane A. Delano. 4th ed. Philadelphia: Blakiston,* 1933. 391 pp. Price, Cloth, $1.40. Paper $.75.

The worth of this textbook is so well established and its use so widespread that any effort to keep it up to date reaches and is appreciated by large numbers of both teachers and students. This last and fourth revision is made in accordance with the new and accepted theories in the prevention of disease and the maintenance of good health. More consideration is given to mental health

and its relation to physical health. Consideration of the newer methods of prevention and control of communicable disease have been substituted for the older less effective methods. Attention is called to the importance of the infant and preschool age in building healthy children and adults. Those responsible for this revision have done a good job in widening the scope and increasing the value of Miss Delano's original contribution to health education.

VIRGINIA A. JONES

The History of Staining—*By H. J. Conn. Published by the Book Service of the Biological Stain Commission, Geneva, N. Y.*, 1933. Price, $2.00.

This book issued under the Chairman of the Commission on Standardization of Biological Stains is interesting and helpful. It adds another debt of gratitude owed by all laboratory workers to this commission. Especially interesting are the biographies of those who were pioneers in the art of staining. This book brings to us fairly complete life histories of many whose names are known to the majority of us only through the stains which they have devised and taught us to use. It should have a place in every laboratory and in libraries. MAZÝCK P. RAVENEL

The Modern Treatment of Syphilis—*By Joseph Earle Moore, M.D. Springfield, Ill.: Thomas,* 1933. Price, $5.00.

Syphilis is a disease in which, perhaps more than any other, proper treatment plays a tremendous part in prevention, so that we are giving a review of this book, in spite of the fact that its title implies it is entirely clinical. However, all through the book the suppression of the disease has been considered fairly.

While the author has considered the works of others freely and used the material obtained in other clinics, this book is based largely upon the study of the 18,000 cases handled at the Syphilis Division of the Medical Clinic at Johns Hopkins Hospital. He divides syphilographers into three groups, the first of which holds that no definite statements can be made as to preferred methods of treatment; the second, that it is worth while to describe the best methods now in use and relate the results attainable, while recognizing their imperfections; and a third which holds that the standardization of treatment for all types of syphilis is not only desirable, but available. To the middle group he claims adherence, and says justly that if perfection were awaited, one might well postpone writing indefinitely. The majority of practitioners will hold with him, and a book such as that before us is a boon to the specialist as well as to the general practitioner who meets the manifestations of syphilis in its many varied forms.

The book is absolutely modern and up to date. He describes therapeutic procedures that have proved their value in the past and the newer ones which are now being tried out and some of which are of recognized value. The author is very cautious in predicting too much of some of the new and spectacular measures, but this attitude impresses one with the dependability of his opinions.

In the clinic, on the material from which he has based his opinions, there is very close coöperation between experts and the different branches of medicine, and the patient is studied and treated from the broadest possible angle.

The sociological side of syphilis is not neglected. The chapter on Syphilis and Marriage strikes us as being eminently sound. It is a question that comes up to the general practitioner frequently, and few can give dogmatic opinions. He discusses post-marital

infection as well as marriage when one or the other party is already infected. The author believes in frankness and points out that if a patient marries with his consent, but without telling the other party of his infection, and if she subsequently becomes infected, the physician is liable to legal proceedings as well as injurious criticism. He holds also that proper treatment depends largely upon both parties knowing the situation, and tells us that divorce under such conditions is not as frequent as might be supposed.

The book is written in a most interesting fashion, shows wide study, and impresses one with its sincerity. The printing is excellent. The illustrations, though few in number, are good. Each chapter ends with a well selected bibliography. We cannot but wish that it had been printed on lighter paper. The work can be recommended unreservedly. DUDLEY A. ROBNETT

Obstetrical Nursing — *By Carolyn Conant Van Blarcom. New York: Macmillan,* 1933. 634 pp. Price, $3.00.

Here is the third edition of an excellent textbook on the nursing care of the expectant mother, the woman in labor, the young mother and her babe. It has the added advantage of being written by a nurse who has worked with numbers of obstetricians and knows they are apt to employ different methods. She overcomes controversial matters by stating that some physicians prefer one method, others another. For instance, in the care of the nipples of the expectant mother. A physician in a recent book on the same subject says the nipples should never be hardened: Miss Van Blarcom says there are two general methods: hardening with skin astringents and softening with ointments, and "both seem to be about equally popular." This is very helpful to a young nurse who needs to know that there are more ways than one to do things and get results.

The author is thoroughly up to date on all scientific facts, and brings out some details that other textbooks on the subject have passed over, the relation between ovulation and menstruation, for instance; and the emphasis on the need for great care on the part of the prenatal patient at the time when menstruation would occur if she were not pregnant.

The chapter on the Mental Hygiene of the Expectant Mother is unusually good. Every public health nurse should be drilled on this chapter. It gives her an insight into psychology which she can get in no other place that I know of.

The book is well arranged and follows the recently noted trend of simplification in the care of maternity patients and their infants. Yet every detail that has anything to do with the subject is treated. An interesting chapter is entitled "Community Facilities for Maternity Care." There is a history and development of the Maternity Center Association of New York together with the accomplishments of the present facilities for prenatal, maternal, and child care. There are plenty of illustrations which are modern and to the point. I recommend the book without a single reservation.

EVA F. MACDOUGALL

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Changes Needed in Obstetrical Practices—"The hazards of childbirth in New York City are greater than they need be. Responsibility for reducing them rests with the medical profession." Thus concludes the recommendations for improving maternal mortality experience. If the name of the city were omitted, the quotation would be equally and generally valid.

ANON. Maternal Mortality. J.A.M.A. 101, 23:1826 (Dec. 2), 1933.

Do Food Handlers Pass on Their Colds to Us?—Fifteen Johns Hopkins apes were long kept free from respiratory infection. Then they were given food prepared by a person with a common cold. Bliss and Long report that within 48 hours 5 apes developed a coryza and 2 a moderately severe cough.

ANON. Transmission of Colds by Food. J.A.M.A. 101, 26:2054 (Dec. 23), 1933.

Preventing Tetanus with Toxoid—Experimental animal tests with tetanus toxoid showed a high degree of protection and suggest the possibility of producing human immunity against tetanus without creating the hypersensitization against horse serum which the use of tetanus antitoxin entails.

BERGY, D. H. and ETRIS, S. Tetanus Toxoid in Prophylaxis Against Tetanus. J. Prev. Med. 53, 3:331 (Nov.-Dec.), 1933.

Additional Indictments against Silica Dust—Silica is a body poison like lead; its worst effects are in the lungs through which it gains access to the body, but silica also impairs any of the functional systems of the body. Silica dust is the most widespread and insidious industrial hazard.

COLLIS, E. L. and YULE, G. U. The Mortality Experience of an Occupational Group Exposed to Silica Dust Compared with That of the General Population and an Occupational Group Exposed to Dust Not Containing Silica. J. Indust. Hyg. 15, 6:395 (Nov.), 1933.

How to Stop Running Noses—Two relatively harmless derivatives of opium (a combination of codeine and papaverine) were found effective in treating cases of acute coryza. The drugs were not effective in treating chronic colds, coughs or influenza.

DIEHL, H. S. Medicinal Treatment of the Common Cold. J.A.M.A. 101, 26:2042 (Dec. 23), 1933.

Encephalitis' Relation to Herpes Virus—Additional evidence is reported that epidemic encephalitis is due to a neurotropic strain of the virus of herpes simplex operating under conditions of peculiar susceptibility in the patient.

GAY, F. P. and HOLDEN, M. The Herpes Encephalitis Problem, II. J. Infect. Dis. 53, 3:287 (Nov.-Dec.), 1933.

Complications of Vaccination—This review of the status of post-vaccinal encephalitis in Holland adds not much to the store of knowledge covered in earlier articles, but it does serve to remind us how fortunate America has been to be spared. Had our native antis been given comparable facts as ammunition, they would have made the Welkin ring.

GORTER, E. Post-Vaccinal Encephalitis. J.A.M.A. 101, 24:1871 (Dec. 9), 1933.

Social Evil Raises Its Ugly Head—Recrudescence of prostitution throughout the United States during the last few years is recounted in this story of two comparable surveys of vice conditions in large cities in 1927–1928 and 1932–1933.

JOHNSON, B. and KINSIE, P. M. Prostitution in the United States. J. Social Hyg. 19, 9:467 (Dec.), 1933.

Bacteriological Prestidigitation—Though not of immediate importance to public health administrative practice perhaps, it is interesting to note that these authors find that one may clear a bacterial culture, with phage, then filter and, through an appropriate technic, recover filtrable forms from the filtrate.

KENDALL, A. I. and WALKER, A. W. Occurrence of Bacteria in the Filtrable State in Active Bacteriophage. J. Infect. Dis. 53, 3: 356 (Nov.-Dec.), 1933.

Nutrition Important in Childbearing—The daily diet of pregnancy should include: 1 quart of milk, 1 or 2 servings of green vegetables, 1 or 2 eggs (or yolks), some fresh fruit and cod liver oil. In addition, sea food twice a week and liver once are recommended by this British research worker. The rest of the diet will take care of itself.

MELLANBY, E. Nutrition and Childbearing. Lancet, 2, 21:1132 (Nov. 18), 1933.

Preventing Tubercle Infections—"These facts face us squarely with the proposition that control of tuberculosis means prevention. A satisfactory immunizing agent is not an actuality; prevention is. Employment of epidemiological measures holds the same promise for tuberculosis as it does for other communicable disease." The "facts" are that first infection is a benign condition which at any time may become a chronic disease. The immunity of first infection is of slight value. We are not justified in speaking of tuberculosis infection without disease.

MYERS, J. A. First Infection and Reinfection Types of Tuberculosis. Am. Rev. Tuberc. 28, 6:793 (Dec.), 1933.

Tuberculosis After-Care—Only the third of the three activities of Papworth Village is familiar to many health workers. But there are in addition to the village settlement and industries a hospital for advance tuberculosis cases and a sanatorium unit for early cases.

ROLLESTON, H. Papworth: The Parent Village Settlement for Tuberculosis. Canad. Pub. Health J. 24, 12:555 (Dec.), 1933.

Measles Preventive Measures—Intelligent nursing in the home is the best method of treatment for measles. Immune serum should be used for delicate children under 3 years and parental blood in all severe cases. Early publicity helps prevent complications. These conclusions are from a New York State study.

SEARS, F. W. Measles in Four Central New York Counties for 1932. New York State J. Med. 33, 23:1381 (Dec. 1), 1933.

Syphilis Cases Can Be Found, But—"It is practical to trace sources of infection and exposures in syphilis. By these measures a larger proportion of cases are brought under observation, the period of infectiousness reduced, and the secondarily infected ratio thereby decreased." It is practical, but all too few attempts will be made to repeat this experience despite the persuasiveness of the paper.

SMITH, D. C. and BRUMFIELD, W. A., Jr. Tracing the Transmission of Syphilis. J.A.M.A. 101, 25:1955 (Dec. 16), 1933.

Methylene Blue and HCN—Injections of methylene blue as an antidote for cyanide poisoning, while useful when the cyanide was swallowed, were found of no benefit in experimental animals which had breathed the poisonous gas.

TRAUTMAN, J. A. Methylene Blue in the Treatment of HCN Gas Poisoning. Pub. Health Rep. 48, 48:1443 (Dec. 1), 1933.

BOOKS RECEIVED

THE FOUNDATIONS OF NUTRITION. Revised edition. By Mary Swartz Rose. New York: Macmillan, 1933. 630 pp. Price, $3.00.

FOOD PRODUCTS. Third edition. By Henry C. Sherman. New York: Macmillan, 1933. 674 pp. Price, $3.00.

CHRONIC NEPHRITIS AND LEAD POISONING. By L. J. Jarvis Nye. Sydney: Angus and Robertson, 1933. 145 pp. Price, $4.00.

THE TEACHING OF PREVENTIVE MEDICINE IN EUROPE. By Carl Prausnitz. New York: Oxford, 1933. 180 pp. Price, $3.75.

INFLUENZA. Part I. By David Thomson and Robert Thomson. Published for the Pickett-Thomson Research Laboratory. London: Balliere, Tindall & Co., 1933. 640 pp. Price, $12.00.

A CITY ON A HILL. By C.-E. A. Winslow. New York: Doubleday, 1934. 367 pp. Price, $3.00.

THE REBUILDING OF BLIGHTED AREAS. A Study of the Neighborhood Unit in Replanning and Plot Assemblage. By Clarence Arthur Perry. New York: Regional Plan Association, 1933. 59 pp. Price, $2.00.

CONTAGIOUS DISEASES. WHAT THEY ARE AND HOW TO DEAL WITH THEM. By W. W. Bauer. New York: Knopf, 1934. 218 pp. Price, $2.00.

MENTAL HYGIENE IN THE COMMUNITY. By Clara Bassett. New York: Macmillan, 1934. 394 pp. Price, $3.50.

AMERICA SELF-CONTAINED. By Samuel Crowther. New York: Doubleday, 1933. 340 pp. Price, $2.00.

NEWS FROM THE FIELD

DR. JOHN L. RICE, NEW YORK COMMISSIONER OF HEALTH

MAYOR LaGuardia's appointment of Dr. John L. Rice as Health Commissioner of New York City is in line with his earlier statement of policy regarding the Health Department. On October 21, 1933, the Mayor is quoted in the press as having spoken in part as follows:

> It is my intention to economize to the limit, at the expense of political bosses, patronage, and waste, but never at the expense of human life. . . . Since health authorities are all agreed that public health is purchasable, I propose to purchase the best there is for our city, and I intend to get it at reasonable cost, without waste or graft, and I intend to get it right away. . . . A strong, vigorous, honest Health Department, working in harmony with the hospitals and the medical profession is absolutely essential to the well-being of every citizen of New York.

It is noteworthy that Mayor La Guardia explored the field of trained public health administrators without reference to residence, and finally selected a Commissioner from outside of his own city.

For over 10 years, Dr. Rice has been the Health Officer of New Haven. He has engaged in public health work continuously since his graduation from Johns Hopkins Medical School in 1917, serving with the Rockefeller Foundation, International Health Division, the Kentucky and New York City Departments of Health. In the summer of 1933 he was one of two health officers chosen by the Carl Schurz Foundation of the Oberlaender Trust to visit Central Europe to study public health conditions and control measures.

Dr. Rice is a member of the Executive Board and Governing Council of the Association, and Chairman of the Health Officers Section. He is also President of the Connecticut Public Health Association. Upon his retirement as Health Officer of New Haven, Dr. Rice was elected an honorary member of the New Haven Medical Society. During his administration as Health Officer of New Haven, the effec-

tiveness of the city public health program steadily improved. This city has been awarded first place for 3 years (jointly with Syracuse in 1932), among cities of 100,000 to 250,000 population, in the National Health Conservation Contest sponsored by the U. S. Chamber of Commerce and the American Public Health Association.

DR. LINSLY R. WILLIAMS

THE tuberculosis movement is immeasurably poorer because of the death of Dr. Linsly R. Williams on January 8 after an illness of several weeks.

Dr. Williams was the third chief executive of the National Tuberculosis Association, assuming the position of managing director in the fall of 1922. For 6 years he directed the destinies of the National Association and helped very materially to shape the course of the Association along sound scientific and financial lines during that critical period.

When in 1914, Dr. Hermann M. Biggs was selected as the first Health Commissioner of the State of New York under the new public health law, he chose Dr. Williams as his deputy commissioner and chief administrative assistant.

At the outbreak of the War, Dr. Williams enlisted and served in various capacities. In 1919, he was called to succeed Dr. Livingston Farrand as director of the Rockefeller Commission on Tuberculosis in France. In this rôle, he developed French resources so effectively that it became possible to organize, wholly under French auspices, a national anti-tuberculosis movement supported by an annual sale of Christmas seals and modeled after the American plan.

In 1922 Dr. Williams accepted the unanimous call of the Board of Directors of the National Tuberculosis Association to become Managing Director, succeeding Dr. Charles J. Hatfield. In 1928 he resigned to become director of the New York Academy of Medicine. In this position his lifelong interest in and knowledge of political and social affairs in New York City coupled with his medical background, enabled him to influence the medical destinies of the city in ways that will be felt for generations to come. To the physicians of New York he brought not only a sympathetic attitude toward their relations with the individual patient but also a keen understanding of the more advanced social position of the physician in the community. As director of the New York Academy of Medicine and as president of the New York Tuberculosis and Health Association, he was constantly being called into consultation by the medical, public health, and political authorities of the City and State of New York on matters of the greatest fundamental importance dealing with health and social welfare.

P. P. J.

DR. R. L. KAHN AWARDED 1933 SCIENCE PRIZE

THE eleventh annual award of the American Association prize of $1,000 given by the American Association for the Advancement of Science to the author of a noteworthy paper presented at its winter meeting, was voted to Dr. Reuben L. Kahn, Member A.P.H.A., Professor of Bacteriology at the University of Michigan Medical School, for his paper "Tissue Reactions in Immunity."

During the World War, Dr. Kahn served first as lieutenant and later as captain in the United States Army Sanitary Corps. He is now a major in the Medical Reserve Corps. Since 1928 he has occupied his present position with the University of Michigan Medical School; he is also director of clinical laboratories of the University of Michigan Hospital.

PROF. SHERMAN WINS CHEMISTRY MEDAL

PROFESSOR Henry C. Sherman, F.A.P.H.A., Mitchill Professor of Chemistry in Columbia University and internationally known for his research and discoveries in vitamins, has been chosen for the William H. Nichols Medal for 1934. This award is presented annually by the New York section of the American Chemical Society.

The medal will be presented to Professor Sherman on March 9 at a meeting of the Chemists' Club.

Established in 1902 for the purpose of stimulating original research in chemistry, the medal this year will go to Professor Sherman for his achievement in vitamin research.

Among the achievements credited to Professor Sherman in collaboration with other chemists is the development of quantitative methods for the determination of vitamins A, B, C and G, which have played a large part in the work of many laboratories upon the concentration, purification or isolation of these particular vitamins.

Professor Sherman has been engaged in research and teaching at Columbia for the last 35 years. In 1924 he was appointed Mitchill Professor of Chemistry. He is senior author of the American Chemical Society's monograph on *The Vitamins;* a research associate of the Carnegie Institution, and a member of the National Academy of Sciences.

GOVERNMENT TO MAKE SURVEY FOR DEAF

TO determine the types of occupations for which deaf and hard-of-hearing young people can be successfully trained, and to discover employment possibilities for them under Civil Works and Public Works Administrations, is the aim of a survey launched by the Federal Office of Education through a grant from the Civil Works Administration. This has been announced by the Assistant United States Commissioner of Education.

PERSONALS

S. S. GOLDWATER, M.D., who joined the Association in 1902 and is a Charter Fellow, has been appointed Commissioner of Hospitals of the City of New York.

R. E. WODEHOUSE, M.D., Member A.P.H.A., was recently appointed Deputy Minister of Pensions and National Health in the Canadian Government. He was formerly Executive Secretary of the Canadian Tuberculosis Association. His successor is G. J. Wherrett, M.D., M.R.C.P.

R. W. BRADSHAW, M.D., College Physician, Oberlin College, Oberlin, Ohio, was elected President of the American Student Health Association held in Chicago, December 27–28.

DR. ROBERT P. FISCHELIS, Member A.P.H.A., Secretary and Chief Chemist of the Board of Pharmacy of the State of New Jersey, and lecturer in Industrial Pharmacy at the Philadelphia College of Pharmacy and Science, has been elected President of the American Pharmaceutical Association for the year 1934–35.

ETIENNE TOTTI, of San Juan, Puerto Rico, member A.P.H.A., was recently appointed by the Hon. Governor Robert H. Gore as a Member of the Insular Board of Health of Puerto Rico.

DR. EUGENE L. BISHOP, Tennessee State Health Commissioner, President-Elect and Life Member A.P.H.A., has been appointed Director of Health for the Tennessee Valley Authority, according to recent newspaper reports.